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WILLIAM R. BRYAN

1989: More of the Same, or the Onset of Recession?

Economic activity has improved markedly in 1988, the sixth consecutive year of expansion. Evidence of improvement has been widespread, extending through markets for goods and services, markets for labor and other productive factors, and markets for credit and financial services.

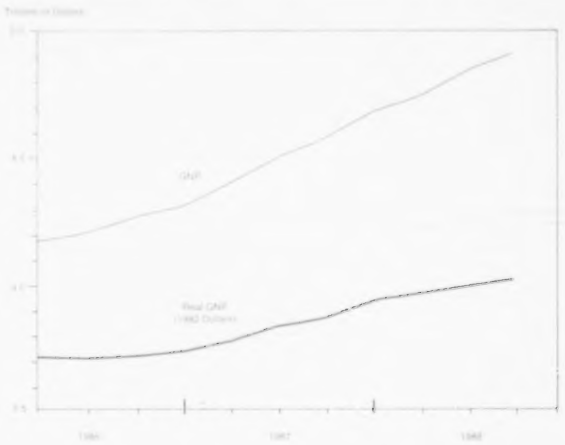
Strength in sectors of the economy other than the federal government has been sufficient to overcome the restrictive effects of economic policy measures. Both monetary and fiscal developments in the past year have tended to limit economic growth. It can be argued that the monetary base has expanded more slowly than the trend. The growth in balanced-budget GNP, a summary measure of fiscal actions, has fallen substantially below trends of earlier years.

This article presents an overview of development in 1988, laying the basis for projections into 1989. The discussion follows a sequence driven by a circular logic: namely, that output leads to employment; that employment begets income; that income leads to spending; then, to complete the circle, that spending calls forth production. To the extent that production and spending on final product proceed at different rates, adjustments in inventories and prices are triggered. Of course, what we treat as a sequence is, in reality, a simultaneous process. But a presentation must begin and, happily, end somewhere.

Output

Physical output has risen rapidly in 1988. The increase in real gross national product (GNP), a measure of the dollar value of goods and services sold in markets but with prices held at levels prevailing in an arbitrary year (1982), has proceeded at just over a 4 percent annual rate. In the preceding year, real GNP expanded about 3.4 percent (Chart 1).

Chart 1. Gross National Product



Growth during 1988 has been most pronounced in the production of additional plants, equipment, inventories, and other elements of investment. Output of consumption goods purchased by households has expanded more slowly than output in the economy as a whole, an annual rate of just 2.5 percent; the production of government goods and services along with those acquired by government have risen at a scant 1.5 percent rate.

Another measure of physical production is provided by the Federal Reserve System's Index of Industrial Production. Published monthly, the index is a measure of the output of the nation's mines, factories, and utilities. Industrial output has risen at just under a 6 percent rate in 1988, continuing the expansion beginning in early 1987.

Labor Markets and Income

The expansion in physical production has been accompanied by a growth in employment. Total employment has risen at more than a 2 percent rate in 1988, roughly in line with experience in the past two years (Chart 2). An alternative measure of the strength of labor demand is provided by payroll employment data. These statistics, which exclude agricultural employment, consist of a count of jobs at work sites. As a consequence, they can include the same person twice. Even so, the measure is responsive to changes in the demand for workers. Payroll employment has expanded at more than a 3.6 percent annual rate in 1988, up somewhat more sharply than in other years since the beginning of the economic recovery.

Chart 2. Labor Market Statistics

The growth in employment in 1988 has been sufficiently strong to bring about a further reduction in unemployment. During the first half of 1988 unemployment as a percent of the labor force declined more or less steadily. But after mid-year the unemployment rate has tended to stabilize.

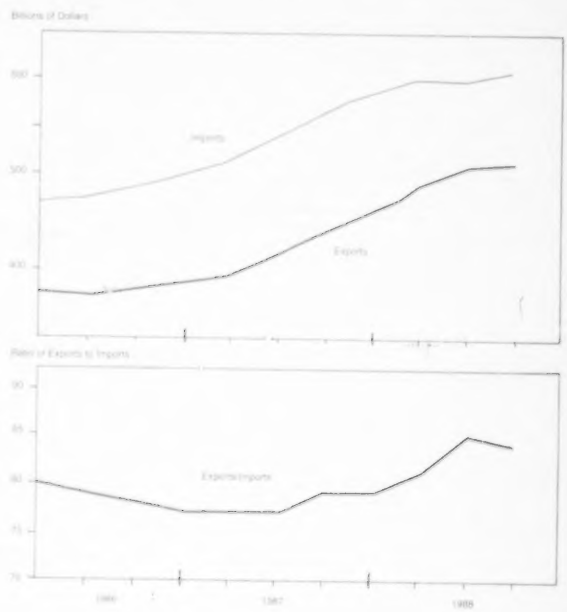
Partly by virtue of the expansion in employment, there has been a strong increase in total income during the year. Personal income, which also includes transfer payments, has risen at a 7.5 percent rate in 1988. After-tax income has increased at just under an 8 percent rate. Speaking in rough terms, the 8 percent rise in income has exceeded the 3 percent growth in employment, implying an increase in wage rates of just under 5 percent. In fact, hourly compensation in the business sector has risen at a 4.7 percent rate in 1988.

Spending

There has been a strong increase in aggregate spending during 1988. Gross national product, a measure of spending on currently produced goods and services valued at current prices, has risen at a 7.5 percent annual rate. Within this total, consumer spending has increased at a 7 percent rate; investment spending by business has expanded at a 10 percent rate; and total government spending (federal government plus state and local government) has risen at a 4.8 percent rate.

The fact that imports exceeded exports means that the diversion of household consumption, business investment, and government spending away from domestic production exceeded foreign spending here. Hence, there was a net diversion of effective demand away from domestic producers. Such developments tend to reduce pressures for price increases. In contrast, but for some of the same reasons, a negative balance on current account vis à vis foreigners has an adverse short-term impact on domestic labor markets. As 1988 unfolded, however, exports rose markedly relative to imports. Exports had eroded to the point where they accounted for only 77 percent of imports (Chart 3).

Chart 3. International Statistics



However, by late 1988 exports had expanded to 84 percent of imports. Of course, balance would be achieved if the ratio of exports to imports were one.

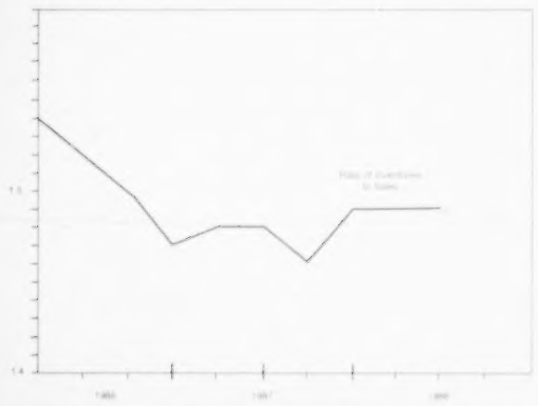
Other measures of spending have also shown strength, but suggest some tapering off late in the year. Retail sales, a monthly measure of sales at retail establishments, showed increases of well over 10 percent early in the year, but since late spring spending growth has slowed abruptly.

Inventories and Prices

There is a view that inventory developments play a vital causal role in the economic process. Indeed, there are those who characterize recessions and expansions in terms of dynamic shifts in business inventories. According to this view, for whatever reason, businesses may wish to expand their inventories. Such actions place other inventories under pressure. Firms experiencing inventory pressure may scramble to maintain them. From their suppliers they make increasingly frequent or expanded orders and seek earlier deliveries. If they can do so, they delay deliveries to their customers. But the upshot of these adjustments is to stimulate overall economic activity. In contrast, for one reason or another, firms may regard their inventories as excessive. Adjustments to excessive inventories involve reductions in orders from suppliers and improved deliveries. As a consequence, suppliers experience inventory increases and, in turn, may find it necessary to cut production. Such adjustments serve both to initiate and to exacerbate weakness in the economy.

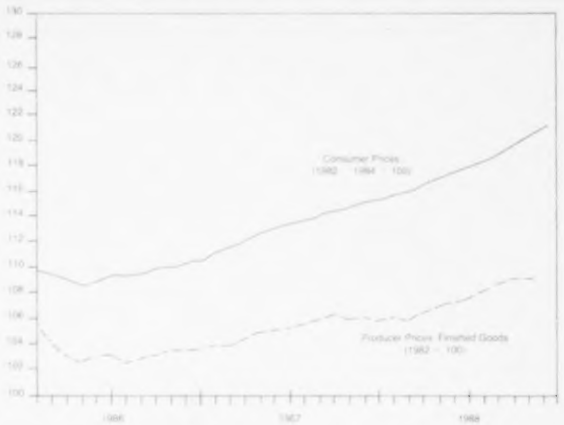
Inventories have drifted lower in recent months and over the past several years. Near the end of the recession ending in late 1982, manufacturing and trade inventories reached a level that would have accommodated sales of more than one and two-thirds months. By late 1987, the inventory-to-sales ratio had fallen to 1.46, but by mid-1988 it had edged upward to a level that would satisfy sales for nearly one and one-half months (Chart 4). In short, part of the adjustment to excessive spending growth has taken the form of a downward adjustment in inventories.

Chart 4. Inventories and Sales, Manufacturing and Trade



The remaining adjustments to the excess of demand over supply have taken the form of price level increases. Even so, the overall rate of inflation during 1988 has been roughly in line with experience during 1987. Consumer prices have risen at about a 4 percent annual rate in 1988, up somewhat from the 3.6 percent increase in the preceding year (Chart 5). Producer prices have risen at a 2.3 percent rate, little changed from the increase of 2.1 percent in 1987.

Chart 5. Price Level Indicators



Financial Developments

By virtue of financial processes, the distribution of spending can differ from the distribution of income across the population of individuals, households, business firms, governments, and countries. During any period, no matter how short or how long, some spending units are in surplus and others are in deficit. An aspect of the economic process is that the sum of deficits is always equal to the sum of surpluses. To a major extent, that equality comes about by virtue of equilibrating shifts in income, spending, inventories, and prices. To some extent, that equality comes about in a process involving changes in interest rates.

Presumably, spending decisions such as those discussed here are influenced by the level of interest rates. Households, businesses, local governments, and others make expenditure plans for the future. As they evaluate their prospective business environment, one element of concern relates to the cost of borrowed funds. Holding constant all other factors affecting a spending decision, it is plausible to believe that high interest rates tend to limit expenditures to a greater extent than low interest rates.

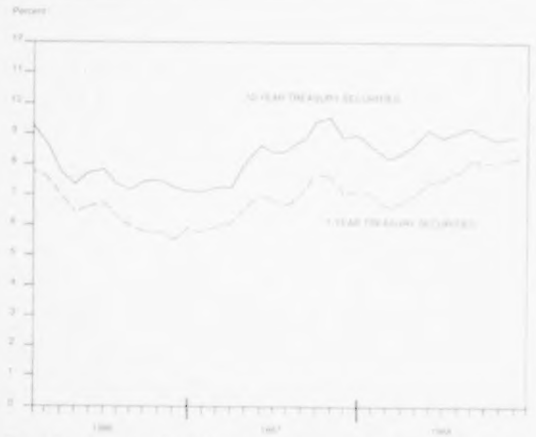
Changes in interest rates are brought about by two major categories of factors. One such category exerts its influences on the public's sensitivity toward interest rates. A reduction in what is referred to here as "sensitivity," means that households, business firms, and others demonstrate an increased willingness to spend even though net lending may be reduced or net borrowing increased. As the public becomes less concerned about interest rates, upward pressure is placed on their general level. In contrast, as spending decisions become increasingly inhibited by considerations relating to the cost of borrowing funds, downward pressure is placed on interest rates. Factors leading to shifts in interest rate sensitivity encompass both institutional and cyclical considerations. Institutional changes such as liberalized debt amortization practices,

reduced down-payments, and lenient bankruptcy practices lead to reduced interest rate sensitivity. That is, they reduce the limiting impact of any given interest rate. Cyclical changes leading to reduced interest rate sensitivity include improved economic prospects, heightened inflationary expectations, tax deductions for interest expenses, an expansion in actual money balances relative to desired balances, and the like.

The second major category of factors leading to short-run shifts in interest rates relates to changes in the disparity between anticipated and actual levels of income. If businessmen, households, and others become surprised and disappointed at what is actually happening to their incomes, two things are likely to happen. Interest rates are likely to have been moving higher as the surprise was in preparation. Then, adjustments to the surprise serve to promote interest rate declines. In contrast, if businesses and households are surprised and pleased with unfolding experience, they are likely to make adjustments leading to interest rate increases.

Interest rates declined in early 1988, then moved irregularly higher through the late fall and early winter (Chart 6). Rising interest rates probably have reflected a combination of heightened inflationary expectations, happy surprises relating to ongoing developments in the economy, and an improved economic outlook.

Chart 6. Interest Rates



The heightened inflationary expectations can have resulted from several months of accelerated, albeit reasonably moderate, price increases. Consumer prices rose at a 5.2 percent rate in July and August; producer prices on finished consumer foods jumped upward at a 10.2 percent rate in May and June; and prices on finished goods, excluding food, rose at a 7 percent rate in September.

The vigorous growth in the economy early in 1988 was regarded as surprising. There had been a great deal of consternation and talk regarding an imminent slowdown in the US economy. Much of the concern was focused on matters that have turned out to be unimportant. Many were concerned by the fact that the economy had already expanded for five years; there was concern about the large and persistent federal deficit, along with the similarly large and equally persistent foreign deficit on current account. But as the early months of 1988 passed, the economy did not weaken; there were periods when the nation's net exports showed improvement; there were periods during which the federal deficit appeared to be narrowing; the nation's prospective presidential leadership became increasingly clarified as the year moved on. The combination of these salutary developments appears to have resulted in an improved outlook.

Working counter to these considerations, economic growth stalled in the third quarter. As indicated, income shortfalls can trigger adjustments leading to declines in interest rates.

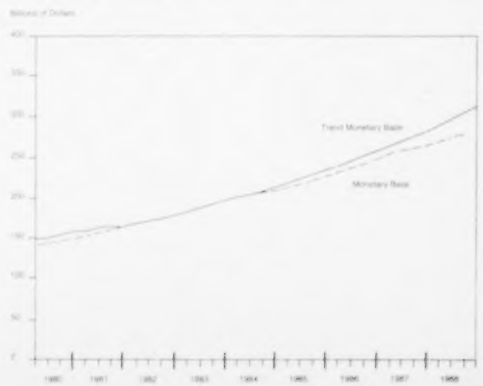
Economic Policy

Economic policy appears to have grown increasingly restrictive in recent years. Restrictive measures are in evidence within both monetary and fiscal spheres.

It is meaningful to regard the monetary base as an instrument encompassing the essence of monetary policy. The monetary base defines the limits within which financial institutions can expand their liabilities (checking deposits, time and savings deposits, and so forth). Accordingly, the monetary base effectively limits the growth of various measures of the money supply and of loans and investments of financial institutions. Thus, the growth of the base is meaningful either in terms of its impact on the money supply or other monetary aggregates, or in terms of its impact on credit markets.

It is fairly clear that growth in the monetary base has fallen below its trend. If the trend growth in the adjusted base is related to data since 1955 (as in Chart 7), it can be argued that the shortfalls in monetary growth have lasted for about four years. If we focus on a somewhat shortened period, the shortfalls become less dramatic.

Chart 7. Monetary Base

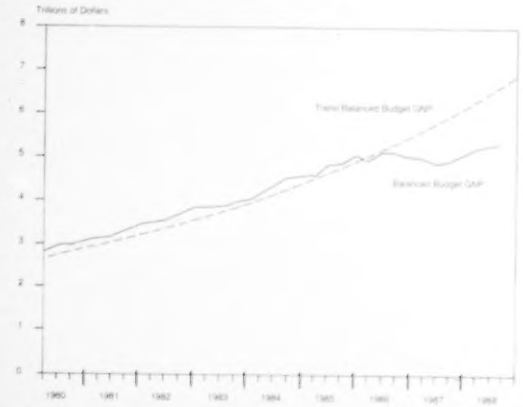


The base expanded at less than a 7 percent rate in 1988, down moderately from 9.1 percent rates of expansion in the two preceding years. In any event, whether viewed against the recent past or over an extended period, it is clear that growth in the monetary base has not been robust.

Changes in balanced-budget GNP may be viewed as summary measures of the impact of fiscal policy. The greater the increase in the level of GNP at which the federal budget would be in balance, the greater would be the change in actual GNP associated with any surge of spending by households, businesses, state and local governments, or foreigners. Some observers regard the federal deficit itself, or changes in the deficit, as a measure of the stance of fiscal policy. The problem with focusing on the actual deficit as a measure of policy is that both its level and its changes emerge from the actions of the whole economy, not just the federal government.

The growth in balanced-budget GNP has fallen well below its long-term trend in recent years (Chart 8). In the 1983–1986 period there was a downward drift in average *net* tax rate (the average tax rate less transfers); such changes serve to expand balanced budget GNP. Over the same period there was a decline in the growth in federal expenditures; such changes serve to moderate the growth in balanced-budget GNP. As it turned out, the net impact of these conflicting forces was to maintain an expansive fiscal stance. But since 1986, fiscal developments have moved toward restriction.

Chart 8. Fiscal Policy Indicators



The assertion that fiscal developments are restrictive may be surprising in light of the persistent and deep federal deficits. As indicated, the actual federal deficit provides a flawed measure of fiscal policy. But even this measure hints at the restrictive fiscal situation. There has been a $68.4 billion movement towards surplus since 1986, notwithstanding a minuscule $2 billion growth in the deficit in the fiscal year just ended. The Office of Management and Budget has estimated a $30 billion movement toward surplus for the fiscal year ending in September 1989. Recall, however, that these developments and estimates depend to an important extent on the performance of those parts of the economy outside the control of the federal government.

Prospects for 1989

There is no hard evidence suggesting that the economy will weaken in the year just ahead. In the absence of such evidence, the most likely scenario for next year is that the economy will continue into its seventh consecutive year of expansion. That expansion will be marked by moderate real economic growth, further increases in employment accompanied by relative stability in the unemployment rate, a modest acceleration in the rate of inflation, and some further upward movement in interest rates. In short, I am suggesting that 1989 will provide us with more of the same, such a forecast is sometimes referred to as a naive forecast.

Even though the naive forecast remains in place, I have a growing hunch that the economy will weaken. I fear that the private and nonfederal elements of the economy will no longer be able to overcome the accumulated restrictive impact of monetary and fiscal measures. If so, the economy will weaken as a consequence of its struggle against, and adjustments to, a constrictive web of monetary and fiscal restraint.

From the perspective of those who pay attention to forecasts of this nature, it will be tough to tell the difference between these two scenarios. It is difficult to distinguish between a slowly expanding economy and one that is weakening. For one thing, by its very nature an economy moves in fits and starts; second, we can nearly always count on minor or major unexpected events (for example, the stock market collapse in 1987, the drought in summer 1988); and, third, there are delays, often important ones, in the availability of data.

Even so, it is sometimes possible to identify warning signs of a weakening economy. For example, look for erratic movements in economic statistics. If the economy is weakening, frequently released data such as retail sales, industrial production, or employment often begin to show abrupt, single-month, downward movements in current releases, or downward revisions in data released earlier. But the movements do not persist, changes in trends are not readily identifiable. The principle difference between developments consistent with the naive forecast and those betraying weakness is that interest rates will fall like a rock if the economy weakens. Here again, however, the decline will not be unambiguous. The rock will bounce upward from time to time.

I have often said that I would prefer to be precisely wrong, rather than vaguely correct. Unfortunately, a well-honed prediction at this juncture has not been forthcoming, nor is it appropriate to the underlying set of facts.

A. JAMES HEINS

State and Local Taxes and Economic Growth in Illinois

The purpose of this article is to establish a perspective on the issue of the impact of taxes on economic growth. There has been a lot of controversy on this subject over the years, ranging from the view that taxes have virtually no impact on growth to the view that any tax increase would drive business out of the levying jurisdiction. My task here is not to resolve this controversy, but simply to lay out its dimensions in a manner that facilitates intelligent discussion of the issues involved.

Let me begin by dividing the larger tax issue into three separate issues. First, there is the question of the "total tax burden." How many dollars and what percent of our personal income in Illinois are taxed by state and local governments to pay for the variety of public services offered? A second issue surrounds the distribution of this total burden among the various classes of citizens, business or nonbusiness, rich or poor. This is the "tax structure" issue. The third is the "tax efficiency" issue. Can we tie the tax burden of any group, say business, to the benefits that group gets from the government services provided out of the taxes paid?

Total Tax Burden

The most recent complete figures available (1986) show Illinois, state and local governments combined, to have raised taxes averaging $1,546 per person for a total of about $17.9 billion. That $1,546 put Illinois in 17th place among the 50 states. If we relate the $1,546 to the income of the average Illinoisan (about $15,187 in fiscal 1986), the Illinois tax burden can be stated as being 10.2 percent of income. By this measure—since Illinois incomes are high—Illinois ranked about 32nd among the 50 states. (This ranking is subject to revisions in personal income estimates.) It is this combination of figures that leads many economists to say that Illinois is an average tax state, not high, not low. The tax burden in Illinois has fallen slightly in the past ten years, relative to other states. In 1976, Illinois ranked 14th and 31st by the same measures respectively.

Having provided these facts, the question is: how does a state's ranking in "total tax burden" affect its economic growth? Simple economic common sense tells us that it depends on how government spends the tax dollars. If taxes were raised, Illinois would move up in the total tax burden rankings. But, if those dollars were used to pay for a *successful* program of educational reform, manpower retraining, and refurbishment of infrastructure supportive of business, the economy of Illinois might actually grow faster. That is why theory and common sense tells us that economic growth cannot simply be tied to the total tax burden.

This apparently conflicts with a variety of studies that purport to show that states with increasing total tax burdens have experienced slower rates of economic growth. Indeed, I have numbers that relate growth and tax change between 1967 and 1986 that show these same results. It turns out also to be true that economic growth is less clearly related to "levels" of taxation than it is to "increases" in taxes.

Regardless, some explanation is required to put the theory in line with apparent experience. First, we might have reverse causation in the face of political inflexibilities. Economic slowdown requires greater relative spending to support social programs, given fixed requirements. Put thus, lagging growth causes increased government. Here, the problem could be attributed to political inflexibilities that might well exacerbate problems with lagging growth.

It could be true that states that increase taxes too rapidly have difficulty spending it wisely. As an economist, I tend to be repelled by the notion that the political wherewithal would be there to finance foolishness. On the other hand, I also see with the eyes of a citizen who finds the idea crudely attractive.

In any event, it is clear that our emphasis should be on government programs as well as total tax dollars. We must fight for the reform of poor programs, like elementary and secondary education in Illinois and medical care delivery, because then any savings of taxes would be good for our economy. Similarly, we might well fight for good programs—like better roads and meritorious education—even though taxes would be higher as a result.

Tax Structure

Another interesting tax question involves the structure of taxes that are used to allocate costs of government among the people of Illinois. On this issue there is wider divergence of opinion among economists, and a subdivision of the issues would be helpful.

Rich and Poor

Here, the issue is how much does the tax burden increase as people get richer? Illinois is widely believed to have a proportional tax system, that is, one featuring a flat-rate income tax, a fairly broad sales tax, and a uniform property tax (outside of Chicago). This compares with states like New York, Wisconsin, Minnesota, and California that feature highly progressive income taxes. People who have lived in Wisconsin know how burdensome their income tax can be when family income is over $50,000.

Again, the question is: what effect does tax "progression" have on economic growth in a state? And, again the common sense of economics leaves us without the dignity of a decent answer. Since we live in a democratic society, the people's "will" is roughly reflected in the tax structure, and the people's will may differ from state to state. If the tax structure were to be "too" progressive and drive the rich away, presumably the "people" would change the law. In other words, our federal structure permits states to have taxes different in structure without necessarily experiencing differences in economic growth.

This common sense is also borne out (at least roughly) by the numbers. Most studies, including my work, do not show states with progressive tax structures to have suffered relative to other states. By general agreement, Wisconsin and Minnesota—states with progressive taxes—have both done better than Illinois, which has essentially a proportional tax structure.

Having said this, I think there is a spreading belief, not readily demonstrable, that progression hurts growth. Wisconsin has reduced its high marginal income tax rates, and other states have too. Illinois has little to do here since its income tax has a flat rate of 2.5 percent, and few have expressed the concern that Illinois' lack of tax progressivity has harmed growth.

Business and Nonbusiness

Here the issue involves the proportion of taxes collected from business relative to taxes collected directly from individuals. Of course, in the end people actually pay the taxes, even though business firms write out the checks to government; business has to get the money from people to cover those checks. So, the issue could be restated in terms of the percentage of taxes collected indirectly from the people through business taxation relative to taxes collected directly from people through individual taxation.

The latest figures we have (1980) show Illinois to have collected 33.9 percent of its taxes from business, compared to a national average of 31.4 percent. Illinois has the highest percentage in the midwest. Perhaps more significant than the rate of business taxation in Illinois is the increase in this rate over the last 20 years. In 1957, Illinois was eight percent below the national average; in 1980 Illinois' business tax ratio was eight percent above the average. My earlier work on economic growth in Illinois suggests that this change in tax policy relative to the nation might have harmed economic growth in Illinois.

Here the theory that business taxes—indirect taxes on people—might harm growth has some foundation. Perhaps the most important reason is that little is known about the real impact that indirect business taxes have on people. Hence, people in a state may misperceive their tax bill to the extent that they rely more heavily on business taxation.

In some cases, states can export their tax burden to people in other states through taxes on special advantages held by business firms in the exporting states. Severance taxes on oil and coal are cases in point. While Illinois would seem not to try to export any of its tax burden—we have no severance taxes—a close look at Chicago's local property tax suggests otherwise. Chicago practices classified assessment; business property is assessed at 40 percent of market, residential at 16 percent of market. This practice has contributed to Illinois' position of leading the nation (save South Carolina where the property tax is not really important) in the percentage of taxable property owned by industrial firms, and therefore, presumably in the percentage of property taxes paid by industry. Illinois is also second only to New York in the percentage of taxable property held by industrial and commercial firms combined.

I think the reason for this situation lies in the ability Chicago nad to export its property taxes in distant years gone by. Its unique location in the center of the world's richest market area with an unrivaled transportation system enabled Chicago to attract business even as the city was socking it to them with high property taxes. Business was willing to pay to locate in this privileged city.

But now that privilege has been eroded, and Chicago is not so special anymore. The interstate highway system, among other things, has taken away some of the locational advantage that allowed Chicago to export its taxes. Business is less willing to locate there in the face of high property and other taxes. Of course, Chicago has a variety of other visible problems that have contributed to its decline.

It is clear that Chicago has to face up to major reform in its property tax. But, that reform will be difficult, to say the least. After all, can you imagine the city council lowering the assessment ratio of business and increasing taxes on houses by 50 percent to make up the difference? More likely, Chicago will work on this through a practice of abating property taxes to new and expanding firms. This is not a wholly desirable solution since it offers nothing to current business that drives the city. But politics may require this ad hoc policy rather than the preferred policy of across-the-board tax reform.

Tax Efficiency

Taxes are most efficient when they are levied against recipients of the benefits of government programs financed by the taxes. This notion is a well-received doctrine in economics, and it is just good common sense. And, it follows that efficient taxation—efficient use of our resources—can only stimulate economic growth.

Unfortunately, we have not progressed very far in designing tax systems that do an effective job of putting the cost of government on beneficiaries. At the national level this connection can be blurred with less difficulty, because while humanity requires some social safety net, and the direct beneficiaries of government cannot pay the cost, taxpayers are not apt to migrate. While states must also be in the safety net business, greater care must be exercised. When costs get out of line, and taxes are levied indiscriminately on people or business with little stake in that safety net, the economy of the

offending state will suffer because people can and will migrate to other states, taking their capital with them.

Road taxes and fees are cases where the costs and benefits of government are tolerably well related. And, studies (mine included) show that financing roads with taxes on road users contributes to economic growth. And, when states with poor highways—like Illinois's have been—spend more for highways, even though taxes are raised to pay the costs, the economy may well benefit because costs are mainly borne by beneficiaries of the improvements.

But that is where tax efficiency pretty much ends. Taxes that pay for education, especially broad-based state taxes, have little relationship to the benefits of education. So too for medical care for the disadvantaged. I do not suggest the sick and poor pay their hospital bills; that is impossible. Of course, we might do a better job of sorting out the really poor and paying only their bills.

I have long advocated a program of levying state taxes on income much like the "levy" system used by local government. Under this system, states would not get added tax revenues simply because their economies grow. State legislators, just as members of city councils do, would have to enact a tax levy every year, instead of just sitting on their hands. I believe this would improve the efficiency of our tax structure and the accountability of our politicians.

Summary

My purpose here has been to help organize discussion of the issues surrounding the impact of taxes on economic growth. I think it is useful to distinguish between the "total tax burden" and "structure" of the tax system that generates the money. It is possible to do economic harm with an average total tax burden if the tax structure is out of tune with the wishes of not only the electorate, but those they would invite to immigrate from other states and countries.

Contentiousness over proposed increases in state taxes in the last two legislative sessions has featured arguments about the total tax burden. Opponents have contended that an increase in state taxes could harm economic growth in Illinois. Proponents have mainly urged that, since Illinois is not a high tax state already, even a tax increase of 15 to 20 percent would not harm growth. Proponents would do better to drop that line and focus on the merits of the public functions financed should a tax increase be proposed again in 1989.

In the end, the efficiency issue dominates. If a majority of the electorate comes to believe that it will receive benefits from government in excess of any increased dollars paid in, a tax increase can pass the legislature. On the other hand, if people widely believe that the benefits come up short, or that money can be freed up from areas of the budget where overspending already occurs, the outlook for higher taxes is bleak.

A. James Heins is a professor of economics at the University of Illinois.

JOHN F. DUE

Some Questionable Provisions of the 1986 United States Tax Reform

The 1986 tax reform legislation brought major improvements to the United States federal income tax structure, particularly in greatly reducing the ease of creating tax shelters. But the changes are by no means generally acceptable. It is the purpose of this article to call attention to various features relating to the individual income tax that diverge from generally accepted standards of federal tax legislation and that are either already or certain to become controversial. It is not the intent to discuss the major, well-known issues, such as the effects of the elimination of the investment credit, curtailment of IRAs, continued double taxation of dividend income, sharp reduction in rate progressivity, or the tax rate on capital gains. Changes made by the technical and miscellaneous Revenue Act of 1988 with regard to the issues discussed are noted.

Phase Out of Exemption

The system for phasing out the personal exemptions and the lower rate for persons in the higher income groups is, as labeled by Joseph Pechman, "bizarre." The effect is to create four tax rates instead of the promised two, though this is concealed, with a marginal rate of 33 percent for persons in the income range in which the two items are being phased out, compared to the 28 percent marginal rate affecting other persons above the level at which the lower rate ends. Not only is this an unnecessary source of confusion, but it is contrary to the objective of holding marginal rates down for incentive reasons. There are other simpler ways of accomplishing the same objective.

Capital Gains and Losses by Mutual Funds

Net capital gains realized by mutual funds are taxable to the holders of the funds even though, unlike other capital gains, the holders have no control over the timing of the gains, whereas net capital losses made by mutual funds cannot be transmitted to the holders. The situation was particularly bad for 1987; some of the funds made large gains prior to the October fall in stock prices. These were taxable to the holders of the funds, as of the record date, even though the shares had fallen in sales value after the stock market fall. Even some stockholders who had acquired the mutual funds after the fall were taxed on gains from which they had not benefitted. The provision that requires the funds to distribute 98 percent of the realized capital gains aggravates the problem.

Payment of Annuities

In 1986 Congress altered the treatment of payouts from various retirement systems retroactively. Prior to the legislation, amounts paid out during the first three years following retirement were not taxed if they did not exceed the previous contributions, on the grounds that these amounts were merely return of sums already paid in by the employee. But the 1986 legislation changed this, to allow exclusion beginning the first year of only a portion of the annuity, based on life expectancy, for persons retiring after 1 July 1986. Thus, many persons found themselves confronted in December 1986 with thousands of dollars of unexpected income taxable for 1986. Regardless of the merits of the change, it was unconscionable for Congress to make this retroactive to July 1986.

Income Averaging

The 1986 act eliminated the income averaging provision. One of the long-standing defects of the income tax had been its discrimination against persons with fluctuating incomes; only in the last decade did the law provide a limited but reasonable approach. Eliminating this restores the earlier inequity against such persons, less severe because of the lower rate progression, but nevertheless significant.

Authors

The 1986 Act introduced changes in tax treatment of authors that can most appropriately be described as idiotic. Under the 1986 legislation, expenses involved in writing a book would not be deductible in the period in which they were incurred but had to be capitalized and deducted on a depreciation basis against the subsequent royalty income. A writer could not lump his writing together and deduct expenses made currently against income from other writing, but could deduct them only from the income from the specific book. This would involve a tremendous amount of nuisance activity for writers of books that yield relatively little income, and potentially serious liquidity problems for authors having heavy outlay during writing. The rule that even postage charges must be capitalized violated all the usual rules relating to expensing. But the main objection is the silly nuisance created. This provision was eliminated by the 1988 Act for freelance authors, photographers, and artists.

Capitalization and Inclusion in Inventory Costs

Major problems have been created by the requirements for capitalization and inclusion in inventory costs of various expenses of manufacturers previously deductible on a current basis.

Scholarships

Another change that may have merit in principle but not in implementation relates to scholarships. As the *Wall Street Journal* recently commented, a student going to college on a scholarship needs to be accompanied by a cost accountant. The rule of the previous law that scholarships were not taxable, while consonant with the rule that gifts received are not income, did result in some inequity and unnecessary leakage of revenue, since students were responsible for tax on income for which they worked but not for that received on a scholarship or fellowship. To make all scholarship income taxable would have sabotaged the intent of scholarship programs and made it necessary to tax all tuition waivers—taxing a sum that the person did not receive and could not receive in money. Thus, only the portion of scholarships that cover tuition, fees, and books was left exempt; any amounts above this are taxable, and the total must be segregated. But some schools give lump sum scholarships that cover tuition, fees, board and room, that is, without the segregation that must be done for tax purposes. While many students will, in fact, pay little or no tax because their total incomes are too low, others, who are able to attend college only because of scholarships that cover living expenses to supplement outside taxable income will be squeezed financially. The whole effort is petty—scrambling for a relatively few dollars of revenue—and contrary to the principle that gifts are not taxable. A much simpler approach would have been to allow exclusion of scholarships only up to a specified maximum per year—if they are to be taxable at all.

Changes were also made with regard to employer-provided educational benefits. These were made taxable to the recipient by the 1986 legislation. This provision was repealed by the 1988 act, effective through 1990, but only for assistance provided for undergraduate, not graduate, education, and the total was limited to $1,500. Also in the 1986 legislation, tuition waivers provided by educational institutions to graduate students were made taxable if they were a portion of the payment for work, as for example, as a teaching assistant. The 1988 act, however, repealed this provision; tuition and fee waivers provided by universities to research and teaching assistants are again excluded from taxable income, but those provided to graduate students who are not assistants are still taxable, an absurd rule. These 1988 changes eliminated some of the worst features in this area of the 1986 act, but anomalies remain.

Two-Earner Families

The elimination of the special deduction for two-earner families restores the marriage penalty, despite the reduced progression in rates. There appears to be no optimal solution to the relative treatment of different family arrangements—single, married couple with one salary earned, one with two persons earning comparable amounts. But the inequity is aggravated by ending the two-earner credit.

Unreimbursed Employee and Investment Expenses

The restriction on unreimbursed employee and various investment expenditures to amounts in excess of 2 percent of adjusted gross income is not logical. Either these are expenses of earning the income and, thus, should be fully deductible without regard to a 2 percent figure, or they are not appropriately regarded as expenses of earning the income and should not be deductible at all. It makes no sense to restrict them as has been done, thus taxing persons on amounts that are not net income. By contrast, a 2 percent rule on contributions would make a great deal of sense; there is no need, either in terms of equity or encouraging contributions, to allow deduction of small amounts.

The Additional Standard Deduction for the Elderly and the Blind

The additional personal exemption for persons over 65 and for the blind was eliminated and replaced by an additional standard deduction of $750 for a single person, $600 for a married person, and the same figure for a qualifying spouse but not dependents. But no equivalent deduction is available for a person who itemizes. This rule makes little sense. The elderly and/or the blind may have substantial medical or other deductible items that make itemization desirable—yet doing so causes them to lose any additional standard deduction.

Complexities

All in all, the tasks of the taxpayer, and thus of the IRS, have been made more difficult by many changes. Reducing the number of rates does not simplify the operation. While a few changes have lessened the compliance tasks, such as elimination of the deductibility of sales taxes, many have aggravated it. The limitation of the interest deduction to those on home mortgages is a source of serious complications and interpretative problems—so serious that change in the provision is imperative. Quite apart from complications, the restrictions will result in substantial change in forms of borrowing, as borrowing for nonhome purposes takes the form of real estate mortgages.

The reporting by stock and real estate brokers of gross proceeds from sales of assets adds materially to the tasks of many taxpayers, and the complex handling on form 1040 of capital gains distributions is seriously confusing. The new rule relating to income of children, although justifiable, adds to complexity for many taxpayers; this rule was simplified somewhat by the 1988 legislation, which makes it unnecessary for children under 14 to file returns if the income is between $500 and $5,000, and solely from interest or dividends, the income is included in the parent's income.

Some Policy Issues

Serious questions can be raised about one policy issue: the elimination of the deduction for state sales taxes. If no other taxes were deductible, it would make little sense to allow deductibility of sales taxes. But with income and property taxes deductible, the nondeductibility of sales taxes involves drastic

interference by the federal government with state-local tax structures. Whether the states are likely to shift from sales to income taxes to any degree is doubtful, but such change is encouraged. To the extent that it occurs, one of the chief objectives of the 1986 reform will, in part, be sabotaged—because state marginal income tax rates will be higher.

One peculiarity is the continued deductibility of taxes on personal property. In some states, such as Indiana, most of the annual registration charge for motor vehicles is designated as personal property tax and is deductible, whereas in other states in which the overall charge is comparable but all is designated as motor vehicle registration fee, nothing is deductible. In general, all major state-local general taxes should be deductible or none of them; the present treatment is very difficult to defend.

A few more general policy issues warrant mention. The continued use—and strengthening—of the alternative minimum tax demonstrates the inadequacy of the overall reform; if the basic tax were satisfactory and all shelters eliminated, no minimum tax system would be required. There are major aspects of the tax that are very difficult to justify under any rational policy: deductibility of interest on a second home, failure to tax capital gains realized at death, the continued very lenient treatment of homeowners compared to tenants, and the various features that give rise to liability under the alternative minimum tax but not the regular tax. But one serious deficiency in the opposite direction remains: the failure to index capital gains, with resultant taxation of gains that are not truly income.

In general, the tax reform involved a number of penny-grabbing actions, while leaving major avenues of escape untouched. Much as it accomplished, the tax reform contains many aspects that can be questioned—provisions that will lead to increasing pressure to make further changes, some already made in the 1988 Act. Once Pandora's box is opened, some of the major desirable features of the change may be lost. But failure to make some changes is intolerable.

Summary

While the legislation of 1986 improved the tax structure in many ways, it created or perpetuated a number of anomalies and features that violate accepted standards of income taxation. These can be avoided by following several criteria:

- Complex provisions should be avoided when simpler methods will serve. Violations of this rule include the system for phasing out the personal exemptions and initial bracket rate as income rises above specified levels, the treatment of scholarships, and others.
- Capital losses should receive the same general treatment as capital gains—which they do not with mutual fund holders.
- Items that are not income by usual standards should not be taxed: Certain mutual-fund-holder capital gains, gifts such as scholarships, amounts that cover unreimbursed employee and investor expenses.
- Tax changes involving significant amounts of tax should never be made retroactive, in the interests of rational financial planning and taxpayer morale.
- The tax should not discriminate against certain forms of income: irregular incomes; those of families involving different patterns of receipt of income, for example.
- The tax should not distort selection of tax structures by the states and local governments; the chief violation is the nondeductibility of sales taxes while income and property taxes are deductible.

John Due is Professor Emeritus at the University of Illinois, Urbana-Champaign. *The author is indebted to several major sources: the Summer 1987 issue of* Economic Prospectives *(Vol. 1), and particularly the article by Joseph Pechman, pp. 11–28; the September issue of the* National Tax Journal *(Vol. 40), entitled "Tax Reform: Now You See It," and many brief articles in the* Wall Street Journal. *I also should like to express appreciation to Professor Karen Hreha of the Department of Accountancy for her assistance.*

Illinois Business Indexes

No foreseeable economic contraction is likely to develop over the next two quarters in the state of Illinois according to leading economic indicators. As Chart 1 shows, both the current and trend indicators have increased throughout most of 1988. Moreover, the current indicator remained above the trend indicator during virtually all of 1988 and part of 1987. The isolated one-month drop in the indexes during September provides insufficient evidence to predict a downturn in economic growth during the next few quarters.

Growth in the Illinois economy is also reflected in the general uptrend in manufacturing employment in the northwestern region and the greater Chicago area (Chart 2). At the same time, retail sales continue to show a strong growth compared to the same period in 1987.

Personal income in Illinois has grown in the past four years, registering marked improvement over experience during the 1980–1982 period (Chart 3). As it is clear from the chart, Illinois trails the nation in personal income growth.

State unemployment has remained above the national average during the past few years, but the seasonally adjusted monthly unemployment rates for Illinois, shown in Chart 4, keep showing a healthy trend.

The national and Chicago help wanted indexes measure the volume of classified advertising in major newspapers throughout the country and the Chicago area, respectively. These indexes also show great sensitivity to changes in the demand for labor. In September, Chart 5 indicates that Chicago and the US are following the same general constant trend. But during the same month, the Chicago index has suffered a 5.98 percent drop compared with the same period in 1987, while the St. Louis index keeps growing at a moderate pace.

Finally, inflationary pressures continue to emerge in the US and Illinois economies. Chart 6 shows that inflation, measured through the Consumer Price Index, has been increasing for the past few months while the Illinois average remains above the national rate.

ILLINOIS BUSINESS INDEXES

	Percent change Sept. 1987–Sept. 1988	*Sept. 1988*	*August 1988*	*July 1988*	*June 1988*	*May 1988*	*Sept. 1987*	*August 1987*
Leading Indicator (Current Indicator)	1.95[a]	12	15	15	14	13	10	12
Leading Indicator (Trend Indicator)	2.52[a]	13	14	14	14	13	11	11
Employment-manufacturing (in thousands)[b]	1.69	950	950	947	950	944	934	933
Average weekly hours-manufacturing[b]	0.00	42	42	42	42	42	42	42
Weekly earnings-manufacturing[b]	2.21	$461.34	$460.65	$462.18	$464.67	$460.10	$451.36	$453.44
Help wanted advertising-Chicago (1967 = 100)[c]	−5.98[d]	110	117	119	117	114	117	120
Help wanted advertising-St. Louis (1967 = 100)[c]	6.25	68	64	74	71	75	64	66
Retail sales (in millions)[e]	13.40	$6,550	$6,282	$6,245	$6,596	$6,627	$5,776	$5,958
Coal production (in thousands of tons)	−7.98	5,100	5,090	4,057	4,275	5,068	5,542	5,226
Petroleum products (in thousands of barrels)[b]	6.67	2,000	2,050	2,000	1,990	1,980	1,875	1,810
Vendor performance[f]	−7.25	64%	68%	68%	70%	66%	69%	60%
Building permits (in thousands)								
Residential housing units	42.68	4,373	4,246	4,112	4,991	4,632	3,065	4,616
Value of residential housing	9.29	$361,047	$355,085	$348,018	$419,199	$384,122	$330,352	$318,192
Value of nonresidential construction								
Industrial buildings	−14.19	$27,897	$33,406	$30,471	$32,728	$30,585	$32,512	$30,566
Office, banks, and professional buildings	4.68	$71,098	$24,292	$43,233	$52,488	$65,638	$67,922	$33,539
Stores and other mercantile buildings	22.37	$62,600	$37,820	$50,288	$59,009	$47,211	$51,157	$34,784
Other	4.50	$4,728	$9,415	$11,870	$6,211	$11,589	$4,524	$8,677
Consumer price index (1982–84 = 100)								
North Central US	3.19	117.2	117.7	116.6	116.0	115.5	113.6	113.1
North Central/population more than 1,200,000	3.85	119.0	118.3	117.7	117.0	116.0	114.6	114.0
North Central/population 360,000 to 1,200,000	3.68	117.0	116.5	115.8	115.6	115.7	112.9	112.6
North Central/population 50,000 to 360,000	3.39	117.4	117.2	116.6	116.1	116.1	113.6	112.8
North Central/population less than 50,000	3.62	114.2	113.9	113.5	112.8	112.2	110.2	110.5
Chicago	4.17	122.0	120.1	119.8	118.9	117.0	117.1	116.7
St. Louis	2.62	117.3	—	116.0	—	114.1	114.3	—
		1988:II	1988:I	1987:IV	1987:III	1987:II		
Personal income (in millions)[b,g,h]	8.04	$201,474	$199,339	$196,140	$189,036	$186,487		
Per capita personal income[b,g,h]	5.87	$17,026	$16,980	$16,890	$16,290	$16,082		

[a]Represents absolute change (percent change not relevant). [b]Recent month is preliminary figure. [c]The Conference Board, *Help Wanted Advertising*, September 1988. [d]Latest month projected by BEBR. [e]Percentage of companies receiving slower deliveries. [f]Seasonally adjusted at annual rates. [g]Percent change between 1987:II and 1988:II.

Chart 1. Composite Leading Indicators *(average percent change in base indexes)*

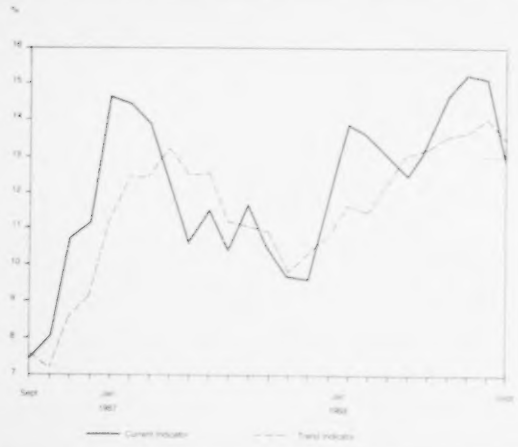


Chart 2. Employment - Manufacturing *(in thousands)*

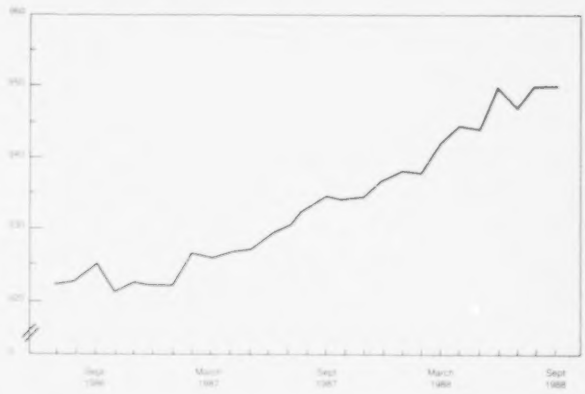


Chart 3. Illinois Total Personal Income *(comparative percent change with the US economy, in constant 1982 dollars)*

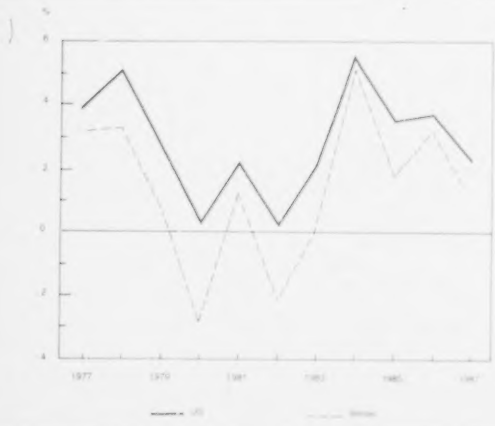


Chart 4. Illinois Unemployment Rates *(seasonally adjusted)*

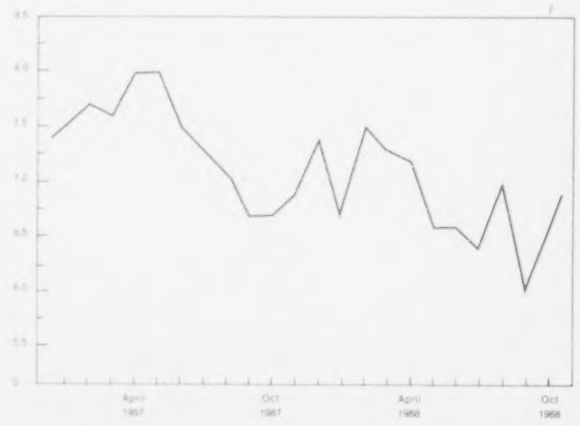


Chart 5. Help Wanted Advertising Indexes *(seasonally adjusted, 1967 = 100)*

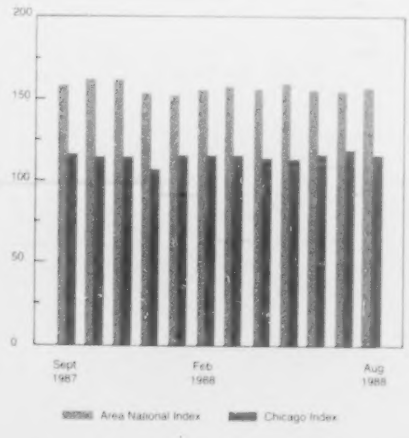
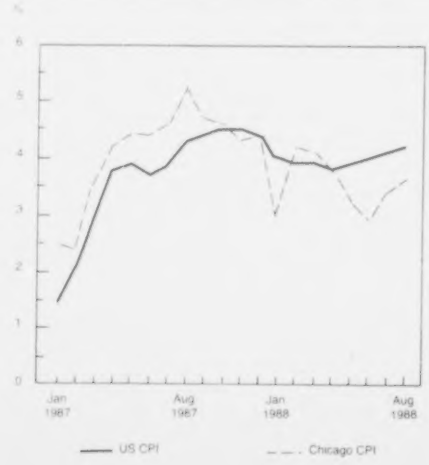


Chart 6. Year-to-Year Change in Selected CPI



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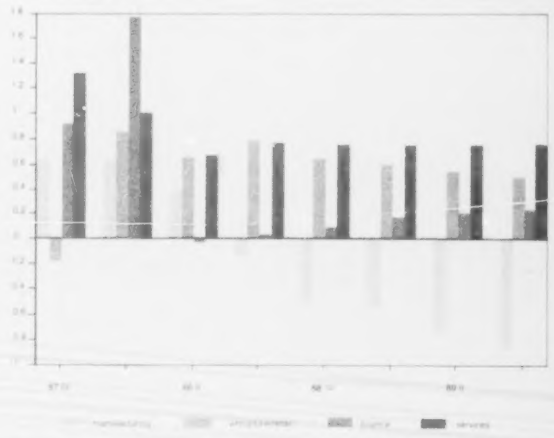
Illinois Economic Outlook

Employment growth in Illinois is expected to be modest for most of 1989. While growth is anticipated in services and trade, both wholesale and retail, declines are likely to occur in manufacturing employment. This is similar to the changes in employment at the national level.

After increasing in the early part of 1989, employment in US manufacturing is predicted to decline over the next several quarters. Other sectors, such as finance and services, are expected to show employment increases. US employment is projected to increase by about 2 percent in 1989, but slower growth is forecast for Illinois.

The chart shows quarterly changes in Illinois employment for the largest sectors of the economy. The chief impression emerging from an inspection of the chart is that there is a marked divergence in growth rates. Declines in manufacturing employment are offset by growth in other sectors.

Chart. Illinois Employment *(percentage change from previous quarter)*



Illinois Seasonally Adjusted Employment

	History				*Forecast*			
	87:IV	88:I	88:II	88:III	88:IV	89:I	89:II	89:III
Total private nonfarm (thousands)	4,128.4	4,187.9	4,212.3	4,193.3	4,276.7	4,283.6	4,284.2	4,285.4
Mining	24.0	24.1	24.0	23.5	23.0	22.5	22.0	21.7
Construction	187.0	202.7	206.5	202.3	196.2	190.2	185.1	180.9
Manufacturing	936.1	941.9	945.5	944.2	939.4	934.1	927.2	919.1
Durables	569.4	571.8	574.8	574.3	570.2	565.8	560.5	554.2
Primary metals	55.6	54.6	54.8	56.7	57.0	57.8	58.3	58.8
Fabricated metals	110.9	108.7	108.8	109.8	110.5	110.5	109.9	109.0
Nonelectrical machinery	139.5	137.8	138.7	140.0	140.1	139.9	138.9	137.6
Electrical machinery	120.2	121.9	122.5	120.0	116.5	114.1	112.1	109.8
Miscellaneous durables	143.1	149.1	150.1	147.7	146.0	143.6	141.3	138.9
Nondurables	367.5	369.7	370.4	369.9	369.2	368.3	366.7	364.9
Food products	91.4	91.2	91.1	90.7	90.9	91.1	90.6	90.1
Printing and publishing	107.1	108.9	109.6	109.5	109.3	109.1	108.8	108.4
Chemicals	57.4	57.8	58.1	58.5	58.8	59.1	59.2	59.1
Miscellaneous nondurables	110.1	111.4	112.1	111.2	110.2	109.1	108.2	107.3
Utilities and transportation	291.4	300.8	301.7	295.5	290.0	285.6	282.0	279.1
Wholesale and retail trade	1,234.2	1,244.8	1,253.0	1,263.0	1,271.2	1,278.8	1,285.9	1,292.3
Finance, insurance, and real estate	357.4	363.8	363.6	363.7	364.0	364.6	365.4	366.3
Services	1,162.7	1,174.5	1,182.4	1,191.4	1,200.4	1,209.6	1,218.8	1,228.1

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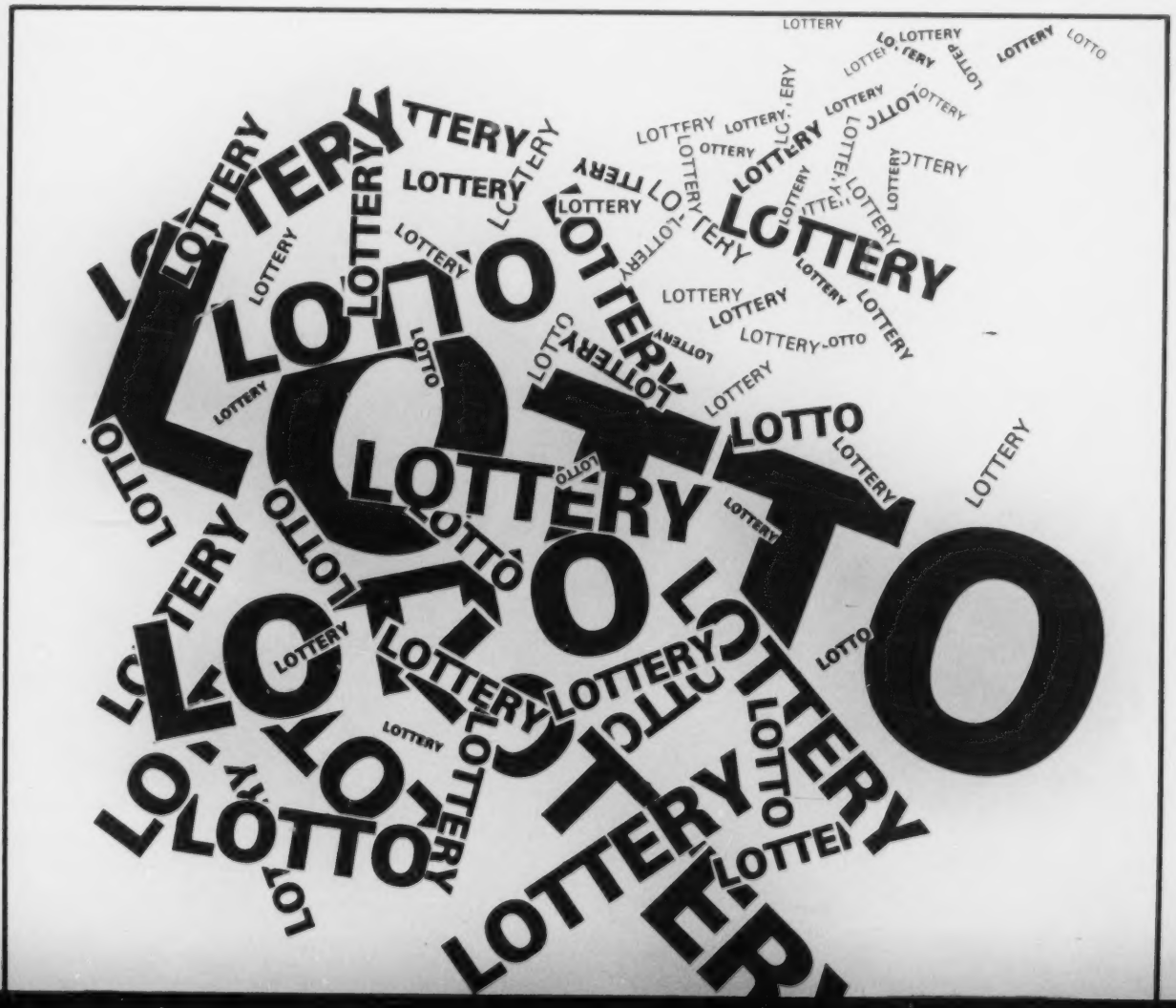

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MARY A. LASCHOBER

Is the Illinois State Lottery a Winning Ticket for the State? A Financial Overview

Lotteries have a long history as a source of government revenue. They were often used to raise money for public purposes in colonial times. In fact, the early Harvard and Yale universities were funded in part with lottery proceeds. The Continental Congress even approved a lottery to help finance the American Revolution, but the lottery failed—the Tories had most of the money.

The modern experience with government-run lotteries began in 1964 when the New Hampshire legislature authorized a twice-a-year sweepstakes on horse race results, with the proceeds dedicated to public education. The first great wave of lottery adoptions occurred between 1971 and 1974 when ten northeastern states, comprising 28 percent of America's population, began operations. Since 1970, state lotteries have been the fastest-growing source of revenue to state governments in the United States. Net lottery income for all lottery states has been growing at 29 percent per year since fiscal year (FY) 1980,[1] accelerating to 36 percent per year since FY 1984. By 1987, 22 states and the District of Columbia operated lotteries; 6 other states had authorized them; and several states were actively debating the issue.

Lottery Issues

Since its authorization in 1974, the Illinois State Lottery has generated total lottery sales of over $7.6 billion and has paid approximately $3.7 billion in prize money. In view of the lottery's acceptance and its growing importance as a source of revenue for the state, it is useful to review some of the issues associated with the operation of a lottery.

First, the lottery has been criticized as providing neither a sizable nor a stable foundation for government revenue. Lotteries raise substantially less revenue than the major broad-based taxes such as the sales, income, and property taxes. Additionally, lotteries appear to have a natural life cycle. As people become bored with existing games, interest wanes and sales decrease. Frequent introduction of new games and aggressive marketing and promotion seem necessary to maintain revenues. The lottery's dependence on new games for growth can lead to inconsistent earnings from year to year. This makes it difficult to forecast accurately lottery profits and, thus, state revenue.

Second, all major revenue sources for state government require considerable resources for their collection. Studies indicate that most state taxes can be collected at much lower costs than lottery profits. Analysis of several lotteries reveals that from 1978 to 1984, average administrative costs have often exceeded 15 percent of total lottery revenue. Does this mean that lotteries are an inefficient source of revenue for state governments? The answer depends on which view of net lottery revenue dominates.

On the one hand, it can be argued that the lottery is a form of government taxation since the state raises lottery revenue for the primary purpose of financing other government activities. It is appropriate to label the resulting net lottery revenue an implicit tax, with a tax rate of 100 percent on net income, that is, all profit is taken by the state. If this view is adopted, collection costs are significantly higher for lottery earnings than for comparable tax collections. On the other hand, it is argued that a state-run lottery is a profit-making enterprise that provides an entertainment service that lottery customers seem to value. Ticket purchases represent a voluntary payment to the state government—unlike compulsory taxes. Therefore, the lottery is not a source of taxation. In this view, the administrative expenses associated with running a lottery "business" are not comparable with tax collection costs and may not constitute waste. Whether it is proper for the state to reap monopoly profits from lottery operations may be a more appropriate concern.

As more states adopt lotteries, competition grows for players and dollars, stimulating more aggressive promotion and marketing efforts. State competition affects both the size and stability of lottery revenues and administrative costs. Higher administrative expenses, coupled with flat per capita sales, tend to reduce lottery profits.

Third, although many states direct net lottery earnings to the general fund, several earmark revenues for specific functions. Illinois targets all lottery profits for public elementary and secondary education. Despite the fact that lottery earnings are assigned to the Common School Fund within the General Revenue Fund (GRF), critics argue that lottery earnings merely replace other sources of revenue for education.

This article focuses on the financial aspects of the Illinois State Lottery within the context of the preceding issues. Are Illinois lottery revenues stable over time, and do they represent a significant source of revenue for the state? Have lottery revenues grown since the creation of the Illinois State Lottery? What is the distribution of total lottery earnings? And what is the link between lottery profits and public education expenditures in Illinois?

Lottery Proceeds from Individual Games

The 50 cent and one dollar games were the first introduced in the Illinois State Lottery. Although the two games combined drew in sales of over $129 million in FY 1975, interest in playing dwindled, causing steady declines in yearly sales. The games were discontinued in 1981. Instant Games, introduced in January 1976, also experienced decreasing sales from FY 1977 through FY 1981. However, Instant Game ticket sales have increased since then to a high of $226.1 million in FY 1988, although growth has not been consistent. Year-to-year changes range from a high of 103.4 percent in FY 1983 to a low of −4.3 percent in FY 1987.

The Daily Game, in which winners match a three-digit number drawn every evening, began play in February 1980. Although it generated substantial sales of $164 million in its first full year of operation (FY 1981), growth in sales slowed and eventually became negative until FY 1988. Daily Game ticket sales of $352.6 million in FY 1988 represented a 5.2 percent increase over FY 1987 sales. This game may or may not continue to show growth in the future.

Another game available from the Illinois State Lottery is Pick Four, in which winners must match the four-digit number drawn every evening. Pick Four, introduced in February 1982, continues to experience increases in annual sales, although year-to-year growth has varied considerably. Fiscal year 1984 sales increased by 7.3 percent over FY 1983 levels, rose by 52.9 percent in the next fiscal year, and dropped again by 13.9 percent in FY 1988. Pick Four sales of $105.9 million in FY 1988 were less than half of Instant Game sales and less than a third of Daily Game ticket sales in the same fiscal year.

Variations of Lotto Six have been in operation since February 1983, with current prize winners correctly picking four, five, or six of the numbers selected from a field of 54. Lotto has produced the most substantial sales, reaching over $644.8 million in FY 1987. As with other lottery games, however, growth of Lotto sales has consistently fallen, with the FY 1988 amount decreasing by 36.6 percent over FY 1987.

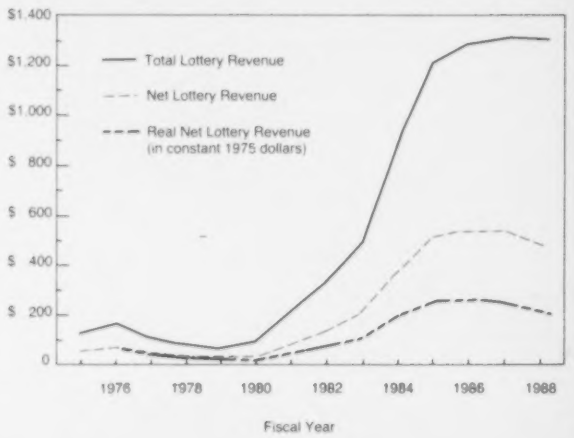
Lotto Seven, introduced in April 1987, may have drawn sales away from Lotto Six. It operated briefly from April 1987 through May 1988, when it was replaced in the same month by Cash Five, a "mini-lotto" game. Yearly sales figures are not yet available for Cash Five.

Annual sales figures for individual lottery games indicate that continued growth and maintenance of current lottery revenues must be accompanied by frequent variations in the product mix offered by the Illinois State Lottery. Promoters need to design new games and advertisements in order to ensure continued participation in the lottery. However, if increased participation eventually levels off, revenues may become relatively static.

Total Lottery Proceeds

Despite general declines in sales growth rates of individual lottery games, the state lottery on the whole has significantly enhanced the growth of GRF receipts for most of the 1980s. (See Chart 1.) Total lottery revenue, the amount of money the State of Illinois actually receives from operating the lottery, consists of total sales plus license fees and interest earned on lottery proceeds. In FY 1988, total lottery revenues reached over $1.3 billion, with net receipts exceeding $487.9 million after deducting commissions to agents and vendors, operating expenses, and prize winnings.

Chart 1. Total and Net Lottery Revenue, FY1975–FY1988 *(in millions of dollars)*



Source: State of Illinois, Department of Lottery

Net receipts, or lottery profits in current dollars grew at a rapid pace from 1980–1987 with an annual compounded growth rate of 47.5 percent. During FY 1983, a period in which the trough of the most recent recession occurred, lottery profits increased more than all other GRF tax revenues combined.

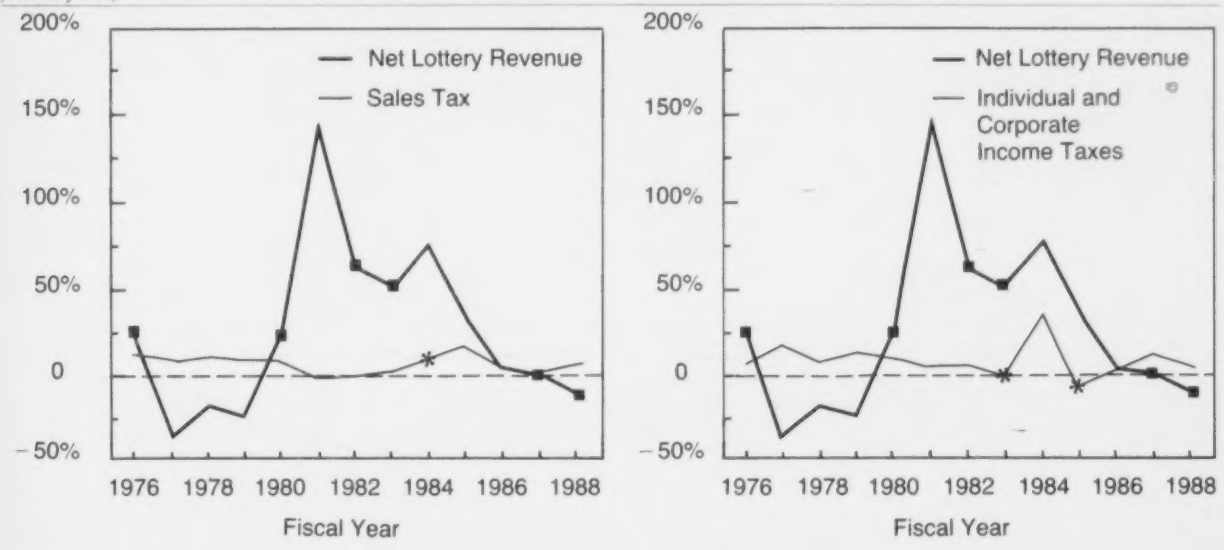
This large amount of money surely has an impact on the state's budget. However, lottery critics claim that the Illinois State Lottery provides relatively small and unstable amounts of revenue for the state. Illinois lottery profits account for a modest share of the state's General Revenue Fund—the fund that supports many

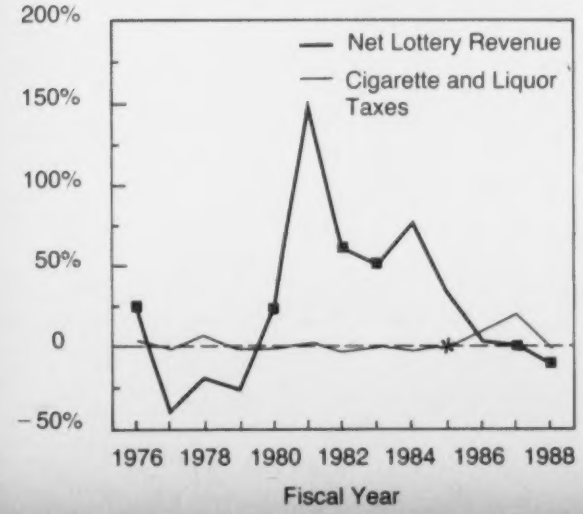
of the largest and most prominent state programs, including elementary and secondary education. Net lottery transfers into the GRF have averaged 2.4 percent of GRF funds since the lottery's inception. The share has risen from a low of .45 percent in FY 1980 to a high of 5 percent in FY 1987. The fraction fell to 4.5 percent in FY 1988. When compared to other GRF revenues such as sales taxes, which have averaged 30 percent of GRF receipts since FY 1975, and income taxes, which have averaged 34 percent, lottery profits do appear relatively small.

The lottery may be viewed as a kind of sumptuary or sin tax on gambling, comparable to liquor and cigarette taxes. In comparison to these excise taxes, lottery revenues seem somewhat more substantial. The lottery has raised more revenue than these two taxes combined since FY 1984. In FY 1988, liquor and cigarette taxes totaled $312 million, while net lottery income amounted to $488 million. Moreover, lottery profits increased at a much higher average rate than cigarette and liquor taxes combined from FY 1975 through the past fiscal year. This occurred despite absolute declines in lottery revenue from 1977 through 1979 and a 67 percent cigarette tax rate hike in 1985.

Unfortunately, lottery profits vary far more, and more unpredictably, than tax revenues. The flow of lottery sales, the base from which the state ultimately generates its profits, depends on the introduction and decline of new state lottery products, lottery activities in adjacent states, economic growth, and marketing efforts. These factors tend to produce instability of revenue flows and may effectively place an upper limit on the growth of lottery receipts. Chart 2 reflects the instability of lottery profits relative to other state sources of revenue. Net lottery revenue grew by approximately 26 percent in FY 1976 and then decreased over the next three fiscal years. From FY 1980 through FY 1987, profits increased every year, but by varying amounts. For example, FY 1981 lottery receipts grew by 148 percent while profits in FY 1987 were only .5 percent greater than FY 1986 profits. Net lottery revenue fell by 10 percent in FY 1988.

Chart 2. Year-to-Year Changes in Selected Illinois State Revenues, FY1976–FY1988 *(percent change over previous fiscal year)*





■ Indicates the introduction of a new lottery game.

* Indicates a tax rate change.

Source: State of Illinois, Department of Lottery; Illinois State Budget, selected years.

It should be noted that the lottery has operated in a relatively unstable environment. It is a comparatively new revenue source, and both lottery administrators and the public have gone through a period of learning and adjustment. Other states have also introduced lotteries that affect Illinois sales. The future may be somewhat less volatile than the past. As evidenced in Chart 1, total lottery revenue has remained fairly constant at a high level over the past four fiscal years. This may indicate that lottery participation has reached a plateau with a rather substantial revenue base.

Several states adjacent to Illinois recently authorized state-run lotteries. Iowa's lottery began operations in August 1985, Missouri's in January 1986, and Wisconsin started selling lottery tickets in September 1988. Voters in Kentucky recently approved a lottery that should begin operating by April 1989, and the Indiana Senate/House Finance Committee has also discussed establishing a state lottery. The lotteries in these border states could have a significant impact on Illinois ticket sales. In order to maintain Illinois' share of lottery sales, more resources may need to be devoted to greater prize winnings and marketing efforts, thereby reducing Illinois' lottery profits. Still, because border states have much lower populations than Illinois, they may be unable to pull players away from Illinois due to their inability to generate the jackpots that Illinois can offer.

Have neighboring state lotteries adversely affected Illinois receipts? During the last three fiscal years, ticket sales, and therefore lottery revenues, have shown the lowest growth rates since 1979. However, neither operating costs nor prize payouts as a percentage of total revenues have increased by a great deal over that time. It is not clear, then, that the lower growth rates result solely from border state competition. The recent trend may also be influenced by the other factors discussed earlier.

Research has shown that lottery sales are very sensitive to economic growth, increasing approximately 3 percent for each 1 percent increase in state personal income. The relationship between Illinois personal income and Illinois lottery sales indicates that a 1 percent rise in personal income is accompanied by a 3.04 percent increase in sales. However, this simple relationship may be misleading. The introduction of new games and new marketing and promotion techniques, designed to broaden the lottery's base and induce sales growth, have not been accounted for. A careful study of the determinants of lottery sales would allow for more accurate predictions about the effects of state competition and economic growth.

Where Does the Money Go?

Of the total Illinois lottery revenue collected each year since FY 1975, an average of 6.6 percent of the money has been paid as commissions and bonuses to ticket agents and vendors. Operating expenses, which include salaries, advertising, and telecommunications, have averaged 4.9 percent of total revenues, while prize winnings have averaged 46.6 percent. Residual revenues, or net lottery receipts, have averaged about 41.8 percent of total lottery revenues.

Table 1 shows the distribution of total lottery earnings by category from FY 1975 through FY 1988. Studies indicate that most state taxes can be collected at a cost of about 5 or 6 percent of collections, including both taxpayer and administrative costs. Compared to these figures, Illinois lottery collection costs are quite high, averaging 11.6 percent of total lottery proceeds when commissions and operating expenses are combined. However, the data also show that while commissions as a percentage of total revenues have stayed relatively constant since FY 1975, the share of total revenues directed towards operating costs has decreased over that period. Illinois has succeeded in raising larger revenues at a decreasing cost over the past 14 years of lottery operations.

Plans for new lottery games must first be approved by the Lottery Control Board. These plans include the share of the game's sales that are to be awarded as prizes. Prize payouts as a percentage of total receipts have remained fairly constant, although FY 1988 winnings jumped by almost 3.5 percent over FY 1987. Initially, the lottery law stated that net lottery revenue could never be less than 40 percent of the total revenue accruing from the sale of lottery tickets. This effectively prohibited a daily game since the combined administra-

Table 1. The Distribution of Illinois Total Lottery Revenue, FY 1975–FY 1988

Fiscal Year	*Total Lottery Revenue*	*Commissions to Agents and Vendors*	*Operating Expenses*	*Prize Payouts*	*Net Lottery Revenue*
1975	129,446,068	5.96%	4.39%	44.96%	44.69%
1976	164,020,049	6.12%	4.49%	44.97%	44.42%
1977	110,561,737	6.23%	7.52%	44.96%	41.29%
1978	83,498,570	6.61%	8.65%	40.30%	44.44%
1979	69,001,872	6.96%	11.31%	41.33%	40.40%
1980	98,356,471	7.43%	9.62%	46.58%	36.37%
1981	215,324,702	7.49%	4.66%	46.66%	41.19%
1982	334,782,404	6.83%	3.27%	47.20%	42.70%
1983	494,937,714	6.76%	3.06%	46.76%	43.42%
1984	887,969,263	6.71%	2.06%	48.45%	42.78%
1985	1,207,621,956	6.68%	1.87%	48.56%	42.88%
1986	1,287,092,023	6.55%	2.39%	49.08%	41.97%
1987	1,306,169,100	6.30%	2.59%	49.55%	41.56%
1988	1,303,815,325	6.34%	3.24%	53.00%	37.42%

Note: Columns 3-6 are expressed as a percent of Total Lottery Revenue in each year.
Source: State of Illinois, Department of Lottery.

tive costs and prize payouts would not have permitted fulfillment of the requirement. An exception to the rule was allowed for fiscal years 1979, 1980, and 1981, and the rule was repealed in 1981. Net revenue has only fallen below 40 percent in fiscal years 1980 and 1988.

The Lottery's Link to Education Spending

Since the lottery was originally established to help fund public primary and secondary schools, a 1985 law was passed requiring that all net lottery revenue be deposited into the Common School Fund. The intent was to assure the general public that lottery receipts were actually being earmarked for public education. Prior to 1985, lottery profits were deposited directly into the General Revenue Fund. Regardless of this accounting formality, lottery profits are mixed with other revenue available for state expenditures. Therefore, it is difficult to determine the exact impact that lottery revenue has had on public education funding. Critics maintain that lottery earnings merely replace other sources of revenue for education, implying that lottery profits do not enhance the education budget.

Ultimately the portion of the Illinois state budget directed toward elementary and secondary education depends on legislative appropriations. Although education appropriations have risen from approximately $1.2 billion in FY 1973 to $3.3 billion in FY 1988, appropriations over the intervening years have not followed a constant upward trend. In several years, they have actually declined. For example, FY 1988 state elementary and secondary education appropriations fell by 2.3 percent from their previous level.

It is also important to realize that lottery proceeds constitute a rather modest share of the revenues that finance education expenditures. Net lottery transfers have funded from 1.3 percent to 18 percent of education appropriations since the lottery's creation. In FY 1988, lottery dollars supported 16 percent of elementary and secondary education appropriations, the GRF funded 65 percent, and various other state and federal funds accounted for the remaining 19 percent of education appropriations. Higher lottery yields, therefore, are funding a larger share of the education budget. However, additional lottery revenues do not necessarily guarantee greater education appropriations on a dollar-per-dollar basis.

The Illinois State Lottery has earned profits of approximately $500 million in each of the last four fiscal years, expanding the state's budget by this amount. This implies that $500 million in other state revenue was freed for government programs. Conversely, if the lottery did not exist, the state would have needed to draw $500 million from other revenue sources to meet its current elementary and secondary education needs. It is hard to imagine that the loss of this $500 million would not have a major impact on all state appropriations, including education.

Comparison with Other Lottery States

All states face the same difficulty of trying to maximize net lottery proceeds without incurring high promotional and administrative costs. How does Illinois compare with other lottery states? In FY 1986, Illinois ranked fifth in total lottery sales among lottery states and the District of Columbia. Illinois' net lottery income in FY 1986 amounted to 5.5 percent of its state tax collections (the third highest ranking state) and 3.9 percent of its own-source state revenue (the fourth highest ranking state).

Table 2 compares Illinois' lottery performance with that of selected states. Illinois raises lottery income of the same magnitude as California and New York. Yet on a per capita basis, Illinois enjoys an advantage over the other two states, with $105.47 per capita lottery

Table 2. The Distribution of Lottery Income for Selected States, FY 1985–FY 1987

	Lottery Income[a] (millions of dollars)			*Per Capita Lottery Income*		
	FY 1985	*FY 1986*	*FY 1987*	*FY 1985*	*FY 1986*	*FY 1987*
Total	$8,081	$11,055	$11,469	NA	NA	NA
California	NA	1,676	1,329	NA	$ 47.69	$ 48.04
ILLINOIS	1,123	1,200	1,222	$97.37	103.87	105.47
Iowa	NA	77	89	NA	27.09	31.27
Michigan	825	931	937	90.86	101.87	101.85
Missouri	NA	197	164	NA	38.81	32.22
New York	1,168	1,205	1,330	65.78	67.70	74.64
Ohio	807	888	1,009	75.14	82.65	93.60

	Prizes (% of Lottery Income)			*Operating Expenses (% of Lottery Income)*			*Net Lottery Income (% of Lottery Income)*		
	FY 1985	*FY 1986*	*FY 1987*	*FY 1985*	*FY 1986*	*FY 1987*	*FY 1985*	*FY 1986*	*FY 1987*
Total	52.1%	52.5%	52.5%	4.4%	5.0%	5.7%	43.4%	42.4%	41.9%
California	NA	53.0	48.3	NA	6.1	9.1	NA	40.9	42.5
ILLINOIS	52.2	52.7	53.0	2.0	1.9	2.8	45.8	45.4	44.3
Iowa	NA	50.9	53.3	NA	15.0	15.7	NA	34.1	31.0
Michigan	51.7	51.7	52.8	4.8	5.0	5.5	43.5	43.3	41.8
Missouri	NA	49.0	47.8	NA	10.3	14.9	NA	40.7	37.3
New York	48.0	49.7	50.7	3.1	3.2	3.1	49.0	47.1	46.2
Ohio	52.7	52.2	56.8	5.6	5.0	6.4	41.7	42.9	36.8

[a]Ticket sales excluding commissions.
Source: US Bureau of the Census, State Government Finances in (selected years).

income in FY 1987. Ohio, which has roughly the same population as Illinois, also had lower per capita lottery income of $93.60 in 1987. While Illinois' prize payout rates are close to the average rate, its operating costs run significantly lower than the other states represented in Table 2. Only New York consistently outranks Illinois in retaining a larger percentage of lottery income as profits (net income). Illinois, then, appears to be relatively successful in selling its products at a comparatively low cost.

Conclusion

For most of the 1980s, the Illinois State Lottery enhanced the growth in GRF receipts. However, continued growth of lottery sales appears to depend heavily on the introduction of new games and marketing techniques. Future increases in lottery income are not likely to be as robust as in past years. Furthermore, lottery profits have not provided a stable foundation for government revenue to date. Still, income, sales, and property taxes have been a part of the state's finances for a longer period of time. It is likely that lottery receipts will stabilize as the lottery matures.

Although Illinois lottery profits have not approached the magnitude of the major broad-based taxes on income, property, and sales, they are large relative to many excise taxes and do enlarge the state's revenue pool. Nevertheless, while lottery profits contribute significant sums to elementary and secondary education, they do not guarantee higher legislative appropriations. In any case, the state has clearly come to depend on lottery income, and its loss would have a major impact on a variety of state activities. The Illinois State Lottery fares well on a state-by-state comparison. Illinois has been able to generate high per capita ticket sales at a relatively low administrative cost.

This article, of course, does not exhaust the list of issues concerning the adoption and operation of a state-run lottery. Several other interesting questions might be asked with regard to the Illinois State Lottery: Could private firms operate lotteries more efficiently than the state? Should the state promote gambling? What factors influence lottery ticket sales? And what is the lottery's impact on business activity in Illinois? These are further topics that could be examined in light of Illinois' lottery experience.

Note

[1]Fiscal years run from 1 July to 30 June of the subsequent calendar years, e.g., FY 1988 ended on 30 June 1988.

ROBERT P. HARTWIG

The Ratings Game: Will the Winner Please Stand Up?

Competition between states to attract new business investment has been markedly intensified in recent years. States compete on a number of fronts based on the availability and cost of resources essential for doing business as well as on issues concerning the quality of life. In addition, it is not at all uncommon for states to offer special tax and financial arrangements designed to entice the prospective investor or entrepreneur. Given that billions of investment dollars, thousands of jobs, and increased tax revenues are potentially at stake, states can be expected to continue to jockey for position in the race for the most favorable business climate.

While most states are eager to help facilitate broad-based business expansion, this is especially true in the so-called "Rust Belt" states of the Midwest and Great Lakes Regions. Hit particularly hard by the decline of American heavy industry over the past two decades, these states have sought to offset and adjust to these losses by attempting to attract new investment capital from both domestic and foreign sources.

States in these regions unavoidably suffer from an identity crisis. On one hand, they seek to shed their perceived image as being in a perpetual state of decline. On the other, a state in search of new sources of investment faces not only the task of creating a favorable self-image but also the additional problem of distinguishing itself from competing rival states.

The extent to which such distinctions are made is not limited to deals worked out between state officials and corporate executives during smokey boardroom discussions. A state's image to the public is equally important. Illinois, for example, in the past year mounted a television advertising campaign targeting the small business investor in which the state touted itself as fertile ground for the growing company. As evidence, these advertisements featured the testimonials of generations of family-owned and operated businesses.

On the foreign front, Governor Thompson has made trips to both Asia and Europe in hopes of conjuring up additional investment from abroad and joint partnerships with existing domestic firms. Illinois also maintains offices abroad for the express purpose of facilitating foreign investment within the state.

Competition is also keen for lucrative government contracts. Most recent was the unsuccessful bid by Illinois and several other states to attract the $4 billion Department of Energy supercollider project, ultimately awarded to Texas, and a successful bid to attract a research center on superconductivity.

In light of such spirited interstate competition, the entrepreneur or potential investor is almost certain to have his number of "best" locations identically equal to the number of states he chooses to investigate. Every state, each for its own reasons, will easily be able to justify to the potential investor why it alone is ideally suited to serve the special needs of his business. Thus, the question of location remains.

Ratings Agencies: Do They Remove or Introduce Bias?[1]

The gap created by the lack of impartiality by the states is filled in part by independent agencies that rate states on a variety of factors ranging from the number of companies experiencing rapid growth in the past year to the relative abundance of amenities affecting the quality of life.

Two of the leading agencies that evaluate states on a broad base of factors are the Corporation for Enterprise Development (CED), a nonprofit research group based in Washington, D.C., and Grant Thornton, a Chicago-based accounting and management consulting firm. The rival ratings firms do not, however, clearly resolve the question of which states provide the best business climates. Table 1 shows CED's[2] and Thornton's selections for the top and bottom ten business climates in the United States. The ratings for a third organiza-

Table 1. Top Ten Best and Worst Business Climates[a]

	Best Business Climates		
	Corporation for Enterprise Development[d]	*Grant Thornton*	Inc.
Ranking		State	
1	Massachusetts	North Dakota	Arizona
2	Connecticut	Nebraska	New Hampshire
3	New Hampshire	South Dakota	Maryland
4	Minnesota	Virginia	Florida
5	Maine	Colorado	Virginia
6	Wisconsin	Missouri	Georgia
7	Rhode Island	Arizona	Delaware
8	Vermont	Kansas	Nevada
9	California	North Carolina	California
10	Hawaii	Nevada	Tennessee
	Worst Business Climates		
41	Oklahoma	Oregon[b]	Nebraska
42	West Virginia	Washington	Louisiana
43	Arkansas[c]	Maine	Idaho
44	New Mexico[c]	Illinois	Iowa
45	Tennessee[c]	West Virginia	Oklahoma
46	Kentucky	Wyoming	Arkansas
47	South Carolina	Louisiana	South Dakota
48	Alabama	Montana	Montana
49	Mississippi	Ohio	North Dakota
50	Louisiana	Michigan	Wyoming

[a]According to most recently issued survey.
[b]Rankings are actually 39 through 48. Thornton does not rank Alaska or Hawaii.
[c]Arkansas, New Mexico, and Tennessee are tied at 43 and are, therefore, arranged alphabetically.
[d]Performance Index.

tion, *Inc.*, are shown as well.[3] It would appear that CED and Thornton must either be evaluating states on a different set of criteria or have quite divergent opinions as to the relative importance of factors contributing to a state's final ranking.

The discrepancies between the CED and Thornton rankings are striking. All of Thornton's hot spots, save Virginia and North Carolina, are located west of the Mississippi, with North Dakota occupying the coveted number one position. On the other hand, all six New England states are represented in the CED top ten list. In fact, there is not a single state that CED and Thornton commonly rate as being among the top ten. And in the battle for the bottom ten, the only agreement is that West Virginia and Louisiana deserve such a dubious distinction.

Rankings of individual states also tend to vary substantially between the two indexes. North Dakota plummets to the 26th position under the CED criteria (and all the way to 49th in yet another set of ratings by *Inc.* magazine), while Maine falls 36 slots from a reputable fifth under CED to an abysmal 41st under Thornton.

What are the sources of these large discrepancies? There are essentially two factors contributing to the disparity between rankings. First, there is a marked difference in the scope of the two systems, with CED providing a much broader measure of both direct and indirect influences on the business climate. Thornton, on the other hand, in its own words, bases its rankings on "...measurement of 21 factors viewed by manufacturers as important to business success. Factors are oriented toward cost of doing business and availability of resources."

In fact, as compared with Thornton, CED incorporates nearly five times the number of categories in its analysis.

While the scope of factors brought under consideration is crucial to the determination of the final ranking, the second contributor to the ranking disparity problem is equally important and is implied by the quote from Thornton. This second factor is the focus taken by each agency. Thornton's emphasis is almost exclusively confined to those factors directly influencing business. This is easily seen in Table 2, which shows Thornton's 21 categories and the weight assigned to each. Note that cost and unionization criteria are given substantial weights.

Table 3 gives an overview of factors considered by CED. This ranking system is divided into four major indexes, each having various numbers of subindexes. These subindexes are, in turn, again subdivided. In all, CED ranks states on 100 different criteria. For example, under the performance index, there are five subindexes: Employment, Income, Job Quality, Equity, and Quality of Life. Subdivisions of these (not shown) are numerous. In the case of the Employment subindex, for example, one has employment growth, the unemployment rate, duration of unemployment, and status of displaced workers.

Table 2. Factors and Weights for Thornton Rankings

Category		*Factor Weight (%)*
A	State and Local Government Fiscal Policies	20.25
1	Taxes	4.44
2	Change in Taxes	4.18
3	Expenditure vs. Personal Income Growth	4.61
4	Debt Growth vs. Personal Income Growth	3.22
5	State Business Incentives	3.80
B	State Regulated Employment Costs	18.39
1	Unemployment Compensation Benefits	4.45
2	Unemployment Compensation Net Worth	4.17
3	Average Workers' Compensation Insurance Payment	4.39
4	Workers' Compensation Insurance Levels	5.38
C	Labor Costs	24.12
1	Wages	7.14
2	Change in Wages	5.36
3	Unionization	6.81
4	Change in Unionization	4.81
D	Availability and Productivity of Resources	20.71
1	Available Workforce	5.78
2	Manhours Lost	4.57
3	Value Added	5.13
4	Energy Costs	5.23
E	Selected Quality of Life Issues	16.53
1	Education	5.31
2	Health Care	3.69
3	Cost of Living	3.82
4	Transportation	3.71
		100.00

Table 3. Major Indexes and Subindexes for CED Rankings[4]

Index	*Subindex*
Policies	Improving Governance and Regulation
	Creating an Effective and Equitable Tax Code
	Mobilizing Capital
	Enhancing Technology and Business Development
	Building and Maintaining Public Works
	Investing in Human Resources
	Helping Distressed Communities
Performance	Employment
	Income
	Job Quality
	Equity
	Quality of Life
Business Vitality	Competitiveness of Existing Businesses
	Entrepreneurial Energy
Capacity	Human Resource Capacity
	Financial Resource Capacity
	Physical Infrastructure
	Amenities

[4]CED does not publish its weightings, nor does it publish an overall index.

While it may be argued that the breadth of the CED ratings criteria tends to dilute the importance of factors that most directly influence business climates, the reality is that states presently experiencing the greatest economic growth are nevertheless better represented by that index. Robert Friedman, president of CED, was recently cited in the *Wall Street Journal* defending his rating system and criticizing Grant Thornton's. Friedman chides Thornton for too easily dismissing such factors as literacy rates, poorly maintained highways, and business ownership by women and minorities, leaving too narrow a measure of states' attitudes toward business.

Thornton's focus on costs necessarily leads to certain biases. In particular, states with a high degree of unionization, high wages, and/or larger state-mandated compensation benefits and payments, such as those located in the traditional industrial states in the Midwest and Great Lakes regions, do not rate favorably. This regional bias will be taken up in the next section.

Thornton's rankings promote states in which the business climate is ripe for growth only in a least cost sense. Friedman claims that Thornton is at odds with reality on this issue because the majority of recent manufacturing growth has occurred in existing industrial states like Ohio and Michigan (the two lowest ranked states under Thornton).

Focus on the Midwest and Great Lakes Regions

Of particular interest in this section are the ratings assigned to Midwestern and Great Lakes states. Here, both indexes again disagree, but not as radically as for those states found among the top ten. In general, states found in these regions do not rate well, with Thornton assigning rankings lower than those of CED. Table 4 shows the rankings of each state in these regions for the major categories under both Thornton and CED criteria.

With the sole exception of Missouri, low rankings for all categories predominate under Thornton. Because of these consistently poor showings, it is easy to understand why three of Thornton's worst ten and six of the bottom twenty business climates are located in these regions. Seven out of eight fall into the lower 50 percent.

Michigan, Ohio, and Illinois are the biggest losers. Michigan, dead last in the overall rankings, is also dead last in the Labor Cost category due to the predominance of organized labor in the state. Poor showings for state-regulated employment costs as well as availability and productivity of resources provide more than enough additional drag to pull Michigan down to last place.

Ohio, ranked second to the end, shares with Michigan the high labor cost and the problem of availability and productivity of resources, with an additional low ranking under the category of state and local government policies.

Illinois ranks the worst nation-wide under the category of state-regulated employment costs and a lowly 40th in the quality-of-life index, leading to a dismal overall ranking of 42.

All states in the region except Missouri fare better under the CED indexes. Michigan, Minnesota, Wisconsin, and Ohio all have rankings among the top ten for various categories. These are highlighted by the first, second, and third places received, respectively, by Michigan, Ohio, and Minnesota in the policies category.

The remainder of the Midwest/Great Lakes region is distinguished neither by high nor low rankings but rather by mediocrity. Illinois, Indiana, and Iowa receive

Table 4. Midwestern and Great Lakes States' Rankings

				Thornton Rankings				
Category	*Illinois*	*Indiana*	*Iowa*	*Michigan*	*Minnesota*	*Missouri*	*Ohio*	*Wisconsin*
Overall	42	36	27	48	32	9	47	3
State & Local Govt. Policies	31	38	45	33	43	8	40	41
State Regulated Employment Costs	48	4	32	46	43	16	30	34
Labor Costs	23	45	10	48	14	15	47	24
Availability & Productivity of Resources	31	44	41	45	16	18	39	28
Quality of Life	40	22	3	35	9	17	27	10
				CED Rankings[b]				
Policy	15[a]	24	15[a]	1	3	15	2	8
Performance	34	22	29	25	4	28	30	6
Business Vitality	38	25	41	22	11	27[a]	27[a]	45
Capacity	14	40	25	35	6	29	28	20

[a]Tied with at least one other state.
[b]CED does not publish an overall ranking.

middle-of-the-road marks, with Illinois showing some promise under the capacity and policies category.

Asking the Right Questions

Putting the conflicting results of the CED and Thornton surveys into perspective is a difficult task. While CED appears to give a clear picture of where business growth is presently taking place, Thornton gives preference to states where it seems that the potential for growth exists.

As previously mentioned, part of the disparity between the two indexes is rooted in the focus and scope of each survey. But beyond the issues of focus and scope are other matters. At a very basic level, one might ask whether the CED and Thornton ratings are completely relevant. In other words, are the right questions being asked? Here, one can only suggest additions or deletions for the rating agencies' criteria.

It is possible, however, to construct indexes based on somewhat different criteria. For example, a pure "bottom-line" criterion coupled with an overriding subjective criterion based on the response to the question: "But would you really locate there?" Thus, while the bottom line may still be largest in North Dakota, the potential investor may reject that option for no other reason than a distaste for cold weather.

Concluding Remarks

Most states would agree that the ratings game is a difficult one to understand, and the outcome is somewhat less than clear. Some states, such as the Dakotas and Nebraska, for obvious reasons, will prefer the Thornton rankings. Others, such as the Midwestern and New England states, will prefer the CED rankings for reasons that are equally obvious. Midwestern and Great Lakes states, however, fare poorly under Thornton and rise only to mediocrity with CED, suggesting that the truly best business climates are not located within those regions.

The inconsistency between Thornton and CED is nevertheless troubling and can only serve as an additional source of confusion for the potential investor or entrepreneur. The disparity between the two indexes is not limited to the scope or focus of the ratings criteria but may originate in the relevance of criteria or even in the format of the index itself.

In any case, both indexes do provide some detailed information on the particular determinants of the local business climate and, as such, do provide a useful service.

Notes

[1]Data were drawn from the Corporation for Enterprise Development publication *Making the Grade: The Development Report Card for the States*, the Grant Thornton publication *The Annual Study of General Manufacturing Climates of the 48 Contiguous States*, and *Inc.* magazine's annual "Report on the States" (October issues).

[2]CED does not compile an overall rating for states. Rather, ratings are given for individual indexes presented in Table 3. Rankings for the top and bottom 10 business climates in Table 1 are taken from the Performance Index.

[3]*Inc.* ratings are included only for comparative purposes and are based on only six factors: number of new jobs, growth in jobs, number of new companies, business birthrate, number of "fast-growth" companies, and percentage of fast-growth companies.

WILLIAM R. BRYAN

Economic Outlook for Illinois

Economic activity in Illinois will quicken in the next two years according to the Illinois Econometric Model. The expansion in the Illinois economy is summarized chiefly in rising income, but it also is reflected by a gradual upward movement in employment. Continuing the trends of recent years, it is projected that the overall growth in the Illinois economy will be uneven. Rapid increases in incomes originating in services, finance, and trade will offset declines in mining and only moderate growth in construction and manufacturing.

Total personal income in Illinois will expand 7 percent in 1989, up sharply from the 3.6 percent growth during 1988. According to the forecast, the rate of personal income growth will rise further in 1990. The anticipated growth in income will exceed the increase in the general price level. Following a 4.5 percent rate of inflation during 1988, the forecast indicates that prices will rise 5 percent in 1989 and 5.2 percent in 1990. These data imply that real personal income in Illinois edged downward 0.9 percent in 1988; will expand 2 percent in 1989; and will rise 3.7 percent in 1990. In short, the forecast for Illinois indicates that there will be substantial improvement in the next two years.

The anticipated gains in Illinois employment do not include a recovery in manufacturing. Increases in employment will be centered in wholesale and retail trade; finance, insurance, and real estate; and services generally. Within Illinois manufacturing, the only anticipated gains will be in primary metals and in chemicals. In any event, the total prospective expansions in nonfarm employment are minuscule: 0.1 percent in 1989 and 0.5 percent in 1990.

These state projections are tied to forecasts of future developments in the national economy. The underlying forecast indicates that the US economy will expand moderately in 1989, with employment rising sufficiently to bring about slight reductions in unemployment. At the same time, the national forecast includes an acceleration in the rate of inflation and some upward movement in interest rates.

The user of the Illinois forecasts must bear in mind their relation to the national forecasts. As future developments in the nation's economy depart from the forecasts upon which the Illinois projections were predicated, the Illinois forecasts become outdated. There is an additional important caveat. Even if developments in the nation as a whole turn out to be reasonably consistent with expectation, there is likely to be fairly large variance in the experience of the individual states. The variance of a whole is smaller than the variance of its constituent parts considered separately. As a consequence, the estimated relationships between the nation and Illinois are subject to substantial error.

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Current Indicators

	1988:IV	*1989:I*	*1989:II*	*1989:III*	*1989:IV*	*1990:I*
Total personal income (millions)	$203,128	$206,385	$209,825	$213,511	$217,443	$221,728
Real personal income (millions)[a]	$168,571	$169,168	$169,898	$170,809	$171,892	$173,225
Private nonfarm employment	4,284,184	4,285,388	4,286,450	4,287,393	4,287,951	4,291,079

[a]1982 dollars

Illinois Business Indexes

The economic outlook for Illinois is unclear based on the BEBR's composite leading indicators. As shown in Chart 1, the trend indicator and the current indicator have been fairly close over the past few months, and, in fact, were identical in October. In November, the most recent month of available data, the trend indicator exceeded the current indicator. A continuation of this trend in the next several months would be interpreted as evidence of a slowing down in the Illinois economy. However, given the movement of the leading indicator series to date, there is not yet sufficient evidence to make such a determination.

Individual indicators for Illinois also convey mixed signals about the health of the state's economy. While nominal weekly earnings in the manufacturing industry have exhibited a moderate upward trend over the past two years, weekly earnings deflated by the Consumer Price Index (real earnings) have fallen during the same period (Chart 2). Real weekly earnings for November 1988 were 2.5 percent below the November 1987 level.

Further, 1988 monthly retail sales, measured in real terms, experienced virtually no growth over the previous year. Chart 3 shows both seasonal patterns and year-to-year changes in real Illinois retail sales. Real sales in 1988 generally matched 1987 levels, with November 1988 sales only 0.4 percent higher than in the comparable year-ending period.

In contrast, per capita income in both current and constant dollars has increased relatively consistently since the first quarter of 1985 (Chart 4). Nominal per capita income growth has exceeded the rate of inflation, indicating an expansion of the Illinois economy. Real per capita income for Illinois reached $14,724 in the second quarter of 1988.

Residential housing permits issued for September, October, and November 1988 were greater than their respective 1987 levels, reversing the earlier weak trend revealed in Chart 5. Finally, in the Illinois coal and petroleum industries, changes in 1988 output levels over 1987 levels fluctuated considerably (Chart 6). However, production in both of these industries rebounded in November 1988. Based on the contradictory signals relayed by recent Illinois data, then, future prospects for the economy remain unclear.

ILLINOIS BUSINESS INDEXES

	Percent change Nov. 1987-Nov. 1988	*Nov. 1988*	*Oct. 1988*	*Sept. 1988*	*August 1988*	*July 1988*	*Nov. 1987*	*Oct. 1987*
Leading Indicator (Current Indicator)	3.75[a]	13.38	13.37	12.79	14.46	15.27	9.63	9.69
Leading Indicator (Trend Indicator)	3.47[a]	13.82	13.37	13.61	13.77	13.72	10.35	9.85
Employment-manufacturing (in thousands)[b]	1.68	950	949	950	950	947	935	934
Average weekly hours-manufacturing[b]	−0.95	42	41	42	42	42	42	42
Weekly earnings-manufacturing[b]	1.45	$459.51	$456.50	$461.34	$460.65	$462.18	$452.94	$448.62
Help wanted advertising-Chicago (1967 = 100)[c]	−8.70	105	110	110	117	119	115	115
Help wanted advertising-St. Louis (1967 = 100)[c]	−5.63	67	78	68	64	74	71	68
Retail sales (in millions)[d]	4.45	$6,309	$6,224	$6,026	$6,267	$6,059	$6,040	$6,033
Coal production (in thousands of tons)	15.19	4,839	5,255	5,100	5,090	4,057	4,201	5,750
Petroleum products (in thousands of barrels)[b]	6.63	1,930	1,950	2,000	2,050	2,000	1,810	2,000
Vendor performance[e]	−15.15	56%	60%	64%	68%	68%	66%	70%
Building permits (in thousands)								
Residential housing units	45.18	3,300	4,262	4,373	4,246	4,112	2,273	3,008
Value of nonresidential construction	5.22	$290,926	$374,593	$361,047	$355,085	$348,018	$276,488	$336,511
Industrial buildings	−3.76	$38,612	$63,244	$27,897	$33,406	$30,471	$40,119	$33,111
Office, banks, and professional buildings	127.66	$81,475	$65,160	$71,098	$24,292	$43,233	$35,788	$80,276
Stores and other mercantile buildings	−14.66	$37,752	$56,098	$62,600	$37,820	$50,288	$44,238	$47,094
Other	−4.67	$5,248	$5,028	$4,728	$9,415	$11,870	$5,505	$8,077
Consumer price index (1982–84 = 100)								
North Central US	4.05	118.1	118.1	117.7	117.7	116.6	113.5	113.5
North Central/population more than 1,200,000	4.11	119.1	119.1	119.0	118.3	117.7	114.4	114.2
North Central/population 360,000 to 1,200,000	4.42	118.0	118.2	117.0	116.5	115.8	113.0	113.0
North Central/population 50,000 to 360,000	3.95	118.4	117.7	117.4	117.2	116.6	113.9	113.9
North Central/population less than 50,000	3.26	114.1	114.2	114.2	113.9	113.5	110.5	110.5
Chicago	4.58	121.0	121.6	122.0	120.1	119.8	115.7	115.1
St. Louis	4.60	118.3	—	117.3	—	116.0	113.1	—
		1988:II	1988:I	1987:IV	1987:III	1987:II	1987:I	1986:IV
Personal income (in millions)[b,f,g]	7.55	$201,474	$199,339	$197,917	$190,246	$187,332[g]	$186,227	$181,782
Per capita personal income[b,f,g]	7.24	$17,325	$17,153	$17,043	$16,394	$16,155	$16,071	$15,698

[a]Represents absolute change (percent change not relevant). [b]Recent month is preliminary figure. [c]The Conference Board, *Help Wanted Advertising*, November 1988. [d]Latest month projected by BEBR. [e]Percentage of companies receiving slower deliveries. [f]Seasonally adjusted at annual rates. [g]Percent change between 1987:II and 1988:II.

Chart 1. Composite Leading Indicators *(average percent change in base indexes)*

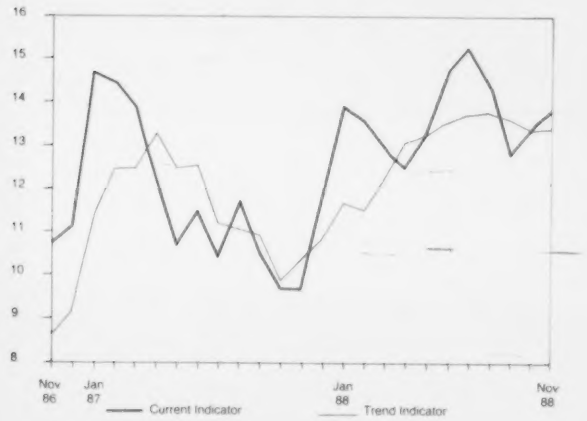


Chart 2. Weekly Earnings—Manufacturing

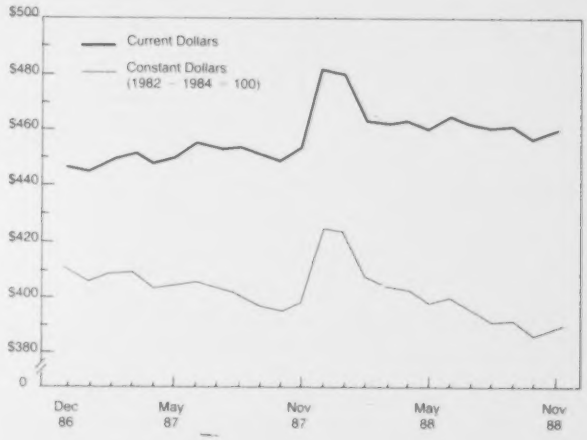


Chart 3. Real Retail Sales *(millions of dollars)*

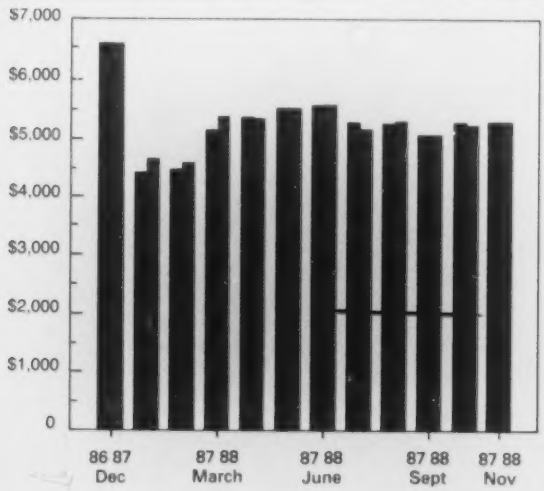


Chart 4. Per Capita Income

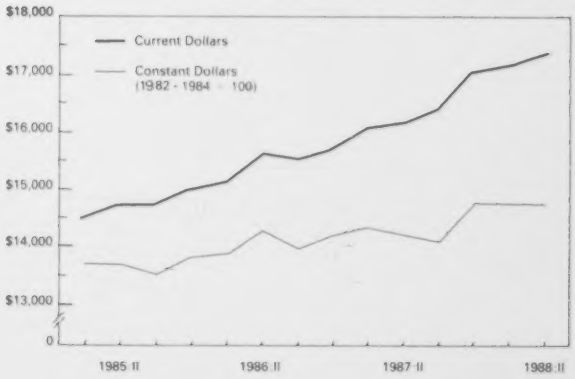


Chart 5. Residential Housing Units *(in thousands)*

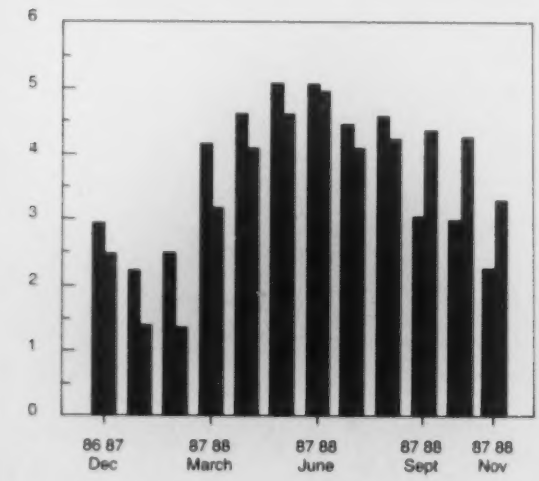
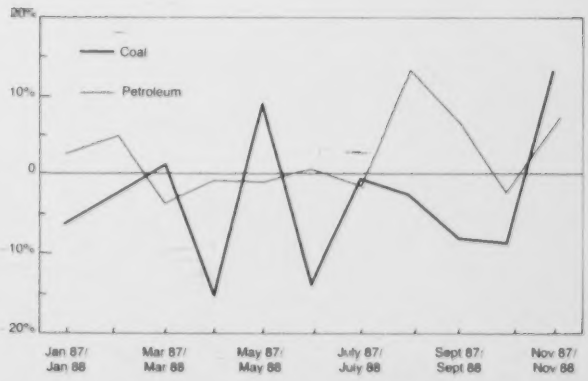


Chart 6. Year-to-Year Changes in Coal and Petroleum Production



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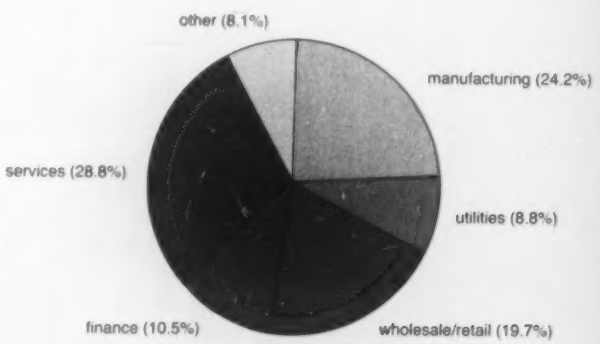
Illinois Economic Outlook

Personal income in Illinois will have grown by 6.6 percent in 1988 according to the Illinois Econometric Model. The model also forecasts a similar rate of growth for 1989. Adjusted for changes in the price level, the income annual increase is expected to be about 2 percent. The sectors that are forecasted to experience the greatest real growth in 1989 are services (5.4 percent) and finance (4.4 percent). Manufacturing is expected to continue its decline, with negative growth of about 2 percent.

The impact of a sector's growth on the overall economy depends on the size of the sector. The chart shows the size of each sector as a percentage of total income. Even a modest decline in manufacturing income has a relatively large effect. In contrast, growth in the financial sector has only a moderate overall impact. As Illinois' manufacturing base continues to erode, strong growth in services or financial industries will serve to moderate the adverse effect. At best, only a modest growth in total income is likely.

Illinois Personal Income *(percentage change from previous quarter)*



Illinois Seasonally Adjusted Personal Income *(nominal, at annual rates)*

	History				Forecast			
	1987:III	1987:IV	1988:I	1988:II	1988:III	1988:IV	1989:I	1989:II
Total personal income (in millions)	$190,246	$197,917	$199,339	$201,474	$203,701	$207,520	$211,433	$215,097
Private nonfarm	121,204	125,151	127,447	130,896	132,405	134,582	136,766	138,792
Mining	953	953	936	956	937	915	900	889
Construction	8,196	8,428	8,726	9,132	9,214	9,341	9,444	9,529
Manufacturing	29,553	29,860	31,588	31,643	31,826	32,124	32,426	32,551
Durable manufacturing	18,126	18,289	19,866	19,827	19,882	20,057	20,260	20,297
Nondurable manufacturing	11,426	11,571	11,723	11,816	11,944	12,067	12,167	12,255
Utilities and transportation	11,073	11,171	11,243	11,457	11,761	11,955	12,135	12,300
Wholesale trade	11,257	11,506	11,587	11,928	12,104	12,276	12,442	12,607
Retail trade	12,997	13,470	13,484	13,846	14,060	14,231	14,399	14,572
Finance, insurance and real estate	12,160	12,569	13,570	13,805	14,114	14,435	14,766	15,110
Services	34,583	36,727	35,830	37,643	38,390	39,309	40,253	41,233

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DAVID F. LINOWES

Privatization for More Effective Government

Much of our nation has become entangled in its own power, stifling creativity and productivity. Government agencies responsible for serving the people have become muscle bound, almost to the point of paralysis when it comes to considering more effective performance. At the same time, other government agencies have reached out beyond the realm of governance by injecting themselves into business operations, to the detriment of both government and business. These trends cannot continue if our free enterprise, democratic society is to survive and thrive.

The issue of the role of government in a democracy has been raised and debated in the United States since our nation was founded over 200 years ago. That same debate has endured throughout the world, in every nation of every culture. It is that debate, raising essential political and economic questions, that has given birth to the privatization movement. Privatization is the transfer of government assets and/or operations to private business interests. As such, it is a recognition that government in any guise cannot be all things to all people. In many nations, it is a reaction against the socialist and Marxist vision that has exerted so much influence in the twentieth century.

The President's Commission on Privatization

To help resolve the question of the proper division of responsibility between business and government, 18 months ago President Reagan appointed a bipartisan commission. I was honored to be asked to chair that commission. In March of last year, I presented our report to the President and the Congress.

After six months of intensive reviews and deliberations during which we heard from 140 witnesses, we found that too many government agencies are trying to solve today's social problems with yesterday's solutions. We must break away from archaic traditional ways and apply constructive alternatives if we are to respond to the poor who need housing, to students who need better education, to prisoners who need rehabilitation, and to travelers who need efficient air traffic control.

A key constructive alternative to solve the problems that are overtaking our society is "privatization." Essentially, this involves three basic guidelines. First, government should reach out to opening its operations to bring in the creative talents and drive of entrepreneurs and executives in the private sector. They can help solve the major problems of our day. At present,

only those who work for government can help solve the needs in medical care, education, poverty, transportation. Our nation is trying to cope with some of the most intractable problems with one hand tied behind its back. The creative talents and ingenuity of those in the private sector are excluded from direct participation unless they quit their jobs and move onto the government payroll. Yet, those active in the free enterprise system are among the nation's greatest resources. We should use them to achieve more effective government performance. We can do that by contracting out many of those operations. One-fourth of the government work force performs functions that compete with, and are similar to, work performed by private business. Cutting back this slice of the public bloat would contribute towards concentrating government on governance, where it more properly belongs.

Another guideline is that consumers who require government service should be given a choice, and not be captive of the particular agency—the public school, medical clinic, or housing project—to which they happen to be assigned. Such choice injects an environment of competition—the powerful force of the market place—in the delivery of social services. Public school students should be given education vouchers, freeing them to attend the public schools of their choice. The State of Vermont has used education vouchers for high school students since 1899. Last year over one-fourth of the high school population used education vouchers, with strong parental satisfaction.

Low income families should be furnished housing vouchers so they can select living accommodations of their choice. Housing for the poor has been a failure. For 50 years, our nation has attempted to satisfy the needs of low-income families by furnishing them public housing and some subsidized programs. Today we have 1.2 million public housing units. Two-thirds are in substandard condition requiring an outlay of $25,000 on average per unit, or $20 billion. Many of these housing projects are overrun by drug pushers and muggers. Others have been demolished after only 12 to 15 years, such as in the cases of Newark, New Jersey, New York City, and St. Louis, Missouri. These buildings had been constructed with a life expectancy of 50 years. Tenants living in substandard projects should be supplied with housing vouchers so they can go into the market place and successfully compete for the kind of housing accommodations they require. We can provide three housing units with vouchers for every one that can be provided by building public housing projects. Ten million low-income people need help, and they are not getting it. A shift in resources towards vouchers could help significantly.

A final guideline, government should not be in the business of business. Our nation should not be a $250 billion money lender. Government has set up large bureaucratic agencies to make direct loans to home owners, farmers, students, business persons. These same types of loans can be handled by banks who could be contracted to charge the same low costs to the borrowers, the government paying the difference between the charge and the market price.

We have a well-developed banking industry with established administrative procedures, well-qualified to take over this function and administer it efficiently. It would handle administrative detail only—not policy. Presently, the default rate for government administered loans is three times that of private operations.

Producing oil belongs in the private sector. Naval petroleum reserves in Elk Hills, California, and Teapot Dome, Wyoming, should be sold. The original reason that President Taft acquired them has long passed. We can realize some $4 billion from the sale of these assets. The many billions of dollars freed up by the sale of these and similar inappropriate government-owned assets could better be invested in reducing the deficit, or in better schools and housing.

In addition to these guidelines that I have described, two caveats are necessary. First, government must always be responsible for making policy and creating standards for traditional government functions, even when the operations of those functions are turned over to the private sector. Thus, if air traffic control were to be contracted out to private business, the Federal Aviation Administration would always have to be there to continue setting policies and monitoring standards. Secondly, current employees' rights should always be fully protected when implementing change. Such a policy would help assure both employee and public that even in private hands the performance of the function would not be drastically changed.

Democratic government must be responsive to citizens' changing needs, rather than be confined to inflexible ideologies. Better methods of meeting the requirements of the American people should be sought so that both public and private institutions deserve and receive the people's confidence.

There are a number of reasons a business enterprise in an economically free market environment produces goods and services in superior quality and quantity to that of a government institution. Government ownership or control often involves political influence. When business-type decisions are based on political expediency rather than business needs, the results can be, and too often are, destructive. When a government operation results in a monopoly, the impetus of market place competition is lost. Consumers become captives of a one-source supplier. Government agencies rarely strive to improve productivity. Government executives know they do not have to be concerned about being forced to go out of business. Losses are replenished by the federal treasury, an added burden to taxpayers.

We also have to consider that turning an operation over to business carries with it an increase of the tax base. The same function performed by private enterprise generates tax revenues. Government-owned operations often pay limited or no taxes.

It always had been assumed that government operation would give the people better goods and services at lower prices. Decades of experience have proved this to be an incorrect assumption. Without the competitive drive of the market place, performance suffers. In considering change, we are aware that the American people do not embrace initiatives that depart too widely from their traditional experiences. Therefore, we provide for incremental transfers to the private sector. Our approach is to build gradual successes. I shall describe a couple examples of how privatization can effectively be applied incrementally.

Postal Service

In the Postal Service, a number of functions cry out for private-sector involvement. Statutes mandating postal monopoly for first and third class mail should be repealed. When restriction on "Urgent" mail was lifted in 1979, we witnessed the dramatic growth of Federal Express, Purolator Courier, DHL, and others. The United States Postal Service now serves only 12 percent of the express market. It is ironic to note that the recent Postal Rate Commission's recommendation for increasing first class mail from 22 cents to 25 cents at the same time recommended that express mail be reduced from $10.75 to $8.75. The reason given was that the Postal Service wanted to be competitive in a market dominated by private delivery services. In the area where the Post Office has a monopoly, rates were raised. In the area that the private sector had been permitted to operate, the Post Office reduced the rates in order to compete. Why not give the private sector an opportunity to compete in first and third class as well so that the public is served to the maximum?

There should be greater economic use of assets owned by the Postal Service. For example, thousands of Post Office buildings throughout the country occupy valuable real estate. Often these buildings are no more than two or three stories high. We should lease out or sell the air space above the structures to entrepreneurs for the construction of 10-, 20-, or 30-story office buildings or apartment houses. The return to the postal operations could run into the hundreds of millions of dollars.

Local post offices in each community are essentially self-contained operating units. Each day the personnel receive bundles of mail that they sort and deliver to the residences. Give them an opportunity to set up their own businesses, contracting from the government for this function, but require them to deliver the mail twice a day instead of once; and keep the Post Office open six full days a week.

Each community postmaster's facility thereby becomes a franchise operation. Policies and standards would continue to be set by the government. Any savings resulting from improved efficiency would be kept by the former employees, now owners of employee-stock-ownership plans. Employees of the Post Office, many of whom are in dead-end jobs, would find themselves as part-owners of a private business in which they share in the profits and the equity. After each employee-owned operation is established, then the government could welcome other bidders for the contract.

Air Traffic Control

Air traffic control is another government function of considerable public concern. Air traffic control officials revealed to us during our site inspections that it takes seven years from the time an administrator concludes that he needs a computer component until it arrives in place. By then the technology is already obsolete. Most computer equipment used by air traffic control is over 20 years old. Because of civil service restrictions, personnel practices are severely limited. For example, an air traffic controller in a small, low cost-of-living community earns the same as a controller in New York or Chicago.

The very nature of our democratic government with its checks and balances and procedures—the genius of our democracy—does not lend itself to managing a function requiring high technology and subject to a constantly changing marketplace. Such an operation requires an executive with full authority to act decisively. Air traffic towers should be contracted out or sold to competitive industry. Beginning with towers in smaller communities, as private organizations develop experience and organizational capacity, they should expand into larger airports. Such functions as training of air traffic controllers and the maintenance of control equipment should be contracted out. Over the years, the private sector should be given the opportunity to take over this operation fully.

There are those who argue that the public would not accept air traffic control by profit-oriented business interests because of concern about safety. The argument rings hollow when we recognize that airlines are owned and operated by private industry, and that the plane itself is manufactured by private business. We entrust our lives to the pilot, hired by business, and to airplanes manufactured and operated by private companies.

Worldwide Privatization

A worldwide trend toward privatization is accelerating dramatically. It has included governments of all political persuasions, even some communist countries. They are coming to appreciate the gains in efficiency that can be achieved by involving the private sector.

British Prime Minister Margaret Thatcher has made the sale of government commercial operations one of the principal themes of her administration. In addition, her government sold more than a million government-owned housing units to tenant residents. When I visited the United Kingdom and met with its top officials, I learned that by selling those properties directly to the tenants, the government divested itself of substantial money-losing real estate, eliminated costly operating subsidies, and is receiving income from mortgage payments. At the same time, it made independent homeowners out of dependent citizens.

Privatization in France has been a top priority since March 1986. Turkey, Italy, Japan, and several African nations have joined the movement. In my mission undertaken to Argentina, Chile, and Uruguay for the Department of State last July, I found considerable privatization activity in those countries, and they are eager to know how to do more (that is the reason I was there). Chile, in particular, in recent years has had a program that has transferred three-quarters of its government enterprises to private business. (I might add, unfortunately, political actions by Chilean President Augusto Pinochet have not yet fully responded to President Reagan's vital human rights demands.) In the People's Republic of China, workers are being allowed to buy shares in their enterprises, which are slowly being freed from state and party control. Even the Soviet Union is moving cautiously in the same direction.

It is interesting that when I discussed our report with President Reagan last March, he observed that in his meetings with heads of state, the subject of privatization constantly arose. It seems all governments with whom he had been meeting had expressed their desire to move forward aggressively with such programs.

Conclusion

For almost a century, the worldwide trend had been towards government growth, embodying the nationalization of industry. In the United States this movement took the form of subjecting industry to increasing government regulation. It has now been recognized everywhere that neither nationalization nor too much regulation work. In rethinking the proper relationship between government and the private sector, privatization has once again raised basic economic questions. Strong movements have emerged to remove government from many of its business-type activities. Interestingly enough, it was Supreme Court Justice William O. Douglas who counseled that if government powers are to be exercised wisely, it is up to business to take the lead.

These issues go to the very heart of the economic and political strength of our nation. The influence of our remarkable, free democracy on world affairs is directly tied to that economic and political strength. Recasting some of the outward concepts of division between government and business is most necessary at this time. This work has only begun. It is my hope that the kind of action initiatives that I have described will lay the framework for involving the talents of private entrepreneurs in performing what is now part of government. They can help meet the needs of all our people. The rewards for renewed national growth and increased economic power can be overwhelming.

Professor David F. Linowes, served as Chairman of the President's Commission on Privatization, Washington D.C., and presented his report to President Reagan and the Congress on 18 March 1988. Since 1976 he has been Professor of Political Economy and Public Policy, and Boeschenstein Professor Emeritus at the University of Illinois. He is also Senior Advisor to the Institute of Government and Public Affairs. This article is adapted from remarks delivered to the Noon Forum of the Cosmos Club, Washington D.C., 13 December 1988.

PAUL C. BISHOP

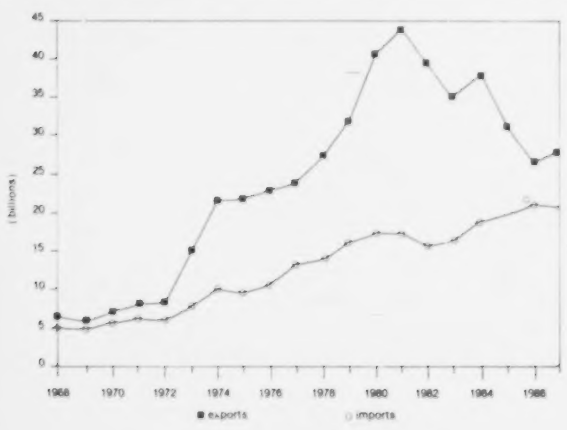
Illinois Agriculture: The International Dimension

The agricultural sector of the US economy has undergone tremendous financial and structural stress in the last decade. Many of the causes and consequences of agriculture's problems can be attributed to excessive debt, weather conditions, and ineffective farm policy. Another aspect of the problem is the recent crisis in the international dimension of the farm situation. Although there are many contributing factors, the most important seem to be the sluggish demand for US farm exports and the intensified competition for export markets at a time when it is increasingly difficult to sell our products abroad. Since Illinois is a major contributor to the volume of US exports, the international aspects of agriculture are of major importance for the state as well.

From Boom to Bust

The robust growth in agricultural markets of the early seventies promised an end to the problems of oversupply and sagging farm income. Economic growth abroad and increased demand for US farm products supported a growing volume of farm exports. In 1970, agricultural exports, primarily wheat, soybeans, and feed grains, were about $7 billion; they jumped to $21 billion by 1974 and reached a peak of over $43 billion by 1981 (see Chart 1). The largest buyers were the developing countries. In 1970, 30 percent of exports went to developing countries, while by the early eighties it was almost 50 percent. This increase was fueled by growth in the world economy and the availability of credit from the industrial nations.

Agricultural Trade
(current dollars)



Such unchecked growth had several consequences. A consensus that the days of oversupply were gone emerged following a significant reduction in excess supplies. As farmers were encouraged to increase production, more land, much of it of marginal quality, was brought into production. Between 1972 and 1981 acreage used for crop production increased by almost 25 percent. Approximately one out of every three acres of farmland was used to produce crops for export. There was rapid inflation of land values, allowing farmers to borrow large sums and greatly to increase their debt burden. By the early eighties, the most highly leveraged producers, accounting for one-tenth of all farmers, owed over $23 billion to commercial banks. Farm income rose to a level not exceeded in the postwar period.

Even those not directly involved in agriculture recognized the significant contribution that exports made to the trade balance (see Chart 2). The agricultural trade surplus rose from about $1 billion in the late sixties to over $26 billion in 1981. Growth in agricultural exports was especially important at a time when the nonagricultural trade balance was steadily worsening.

Trade Balance
(current dollars)

By 1981, the boom was beginning to falter. Exports began to decline, primarily due to the global recession and a strong dollar. As third world countries struggled under the burden of their enormous debt, demand for US farm products diminished at a time when other nations were increasing their share of export markets. As long as markets were growing, there was room for everyone to compete in the world marketplace. Once the recession began, the vexing problem of oversupply and sagging prices returned.

Market Share, Competition, and the Dollar

The international marketplace is now a much different place from what it was in the seventies. While the United States is still a dominant player in export markets, it is no longer the only player. There has been

a steady increase in the share of exports contributed by other nations. For example, the European Community was a net importer of wheat in the seventies but now exports about 15 percent of world export supplies. Similarly, Canada has almost doubled its market share in the wheat trade. In 1979, the United States had 80 percent of the corn market but now has only about 60 percent. Although still the largest exporter of soybeans, the United States has seen its market share decline in recent years as well.

The vigorous competition now facing the United States results from a fundamental change in world export supply conditions. Table 1 shows the results from a recent study of comparative costs across various countries. According to these results, the United States is not the lowest cost producer of certain commodities; even so, the United States is an important competitor.

Table 1. Costs of Production and Share of Exports *(1987, US dollars per metric ton)*

	Wheat		*Corn*		*Soybeans*	
	Cost	*Share*[a]	*Cost*	*Share*[a]	*Cost*	*Share*[a]
United States	$129.80	33.2	$91.52	67.8	$165.06	75.9
Argentina	70.34	8.2	74.84	9.2	130.08	9.6
Brazil	—	—	—	—	229.64	8.2
Canada	137.39	18.4	—	—	—	—
Thailand	—	—	68.78	4.1	—	—
Australia	125.07	10.4	—	—	—	—

[a]Approximate percentage of total world exports.

Source: Cost data adapted from Table 1 of "Can U.S. and Great Plains Agriculture Compete in the World Marketplace?", *Economic Review* of the Federal Reserve Bank of Kansas City, February 1988.

Table 1 shows estimates of the costs to produce wheat, corn, and soybeans in the United States and in other competing nations. Argentina appears to be a very formidable competitor in cost terms. However, the amount that these countries produce for export is less than that produced by the US. For example, Argentina produces less than fifteen percent of the volume of corn and soybeans for export that the United States produces. The low-cost producers do not have the resources to produce these commodities in the volume necessary to sustain trade. Even so, given the very soft international markets, the United States is now exposed to two forms of uncertainty because it is a residual supplier rather than the primary supplier. First, there is the uncertainty about the volume of exports from other low-cost competitors. US exports will depend upon the amount produced abroad *in total* since our exports will make up any difference between output from other countries and total demand. Second, the United States is also exposed to the same demand conditions that other nations face. In periods of soft demand for farm products, the United States loses a larger share of its market than accounted for by the decrease in world exports. The reason is that other lower cost supplies are available, albeit at a level not capable of satisfying demand. For instance, world wheat exports fell by 9.7 million tons between 1981 and 1986, but US exports of wheat fell by 18.6 million tons for the same period. Data for corn and soybean exports reveal a similar disparity.

A second factor contributing to the decline in farm exports is the growth in agricultural productivity abroad. Producers such as Thailand and Brazil have growing agricultural labor forces necessary for labor intensive cultivation of food products. Similarly, the more industrialized nations have benefitted from improved production methods and technologies that have greatly increased production efficiency. Between 1975 and 1984 output per unit of labor input increased by about 30 percent in Brazil and Thailand, by over 40 percent in Argentina and Australia, and by more than 70 percent in Canada and the United Kingdom. In the United States for the same period, productivity increased by about 55 percent. Greater productivity allows countries that did not previously compete with the United States to apply pressure to our export markets by increasing supplies and aggravating the effects due to the previously mentioned decreasing market share.

A third important reason for the stagnant agricultural export picture is the strong agricultural exchange rate. Most indexes of the value of the dollar compared to other currencies use the volume of trade in manufactured goods to weight the relative importance of a specific country in the index. A more revealing method consists of dividing the volume of trade between agricultural and nonagricultural exports in the formulation of an exchange rate index. Table 2 shows such an index calculated for each year between 1973 and 1986. Column 1 is a general trade weighted index based on the volume of all trade between the United States and each country in the index. Column 2 is similar except that the volume of nonagricultural trade is used as a weight for each country, and Column 3 uses the volume of agricultural trade. Column 1 indicates that between 1979–80 and 1984–85 the value of the dollar increased by 39 percent for all traded goods.

Table 2. Trade-Weighted Real Exchange Rate Indexes for the US Dollar *(1979–80 = 100)*

Year	*Total Exports* (1)	*Nonagricultural Exports* (2)	*Agricultural Exports* (3)
1973–74[a]	85	86	79
1974–75	83	85	78
1975–76	85	86	80
1976–77	84	86	78
1977–78	81	83	73
1978–79	81	83	73
1979–80	100	100	100
1980–81	109	108	110
1981–82	121	120	124
1982–83	125	124	129
1983–84	135	134	140
1984–85	139	138	148
1985–86	130	129	140
Number of Countries	77	77	77

[a]Agricultural marketing years, 1 October to 30 September.

Source: "A Weaker Dollar and US Farm Exports: Coming Rebound or Empty Promise," *Economic Review* of the Federal Reserve Bank of Kansas City, May 1987.

Over the same period the value of the dollar increased by 38 percent in nonagricultural trade and by 48 percent for agricultural trade. In the last year of the index, the value of the dollar declined by about 7 percent for nonagricultural trade and by 5.7 percent for trade in farm products.

The reason for the difference can be traced back to the differences in the countries that import US manufactures and those that import farm products. The latter group is made up of a number of developing countries. Developing countries are more likely to have a fixed exchange rate regime rather than a floating or managed floating system. Under a fixed regime short-run market fluctuations are not translated into exchange rate movements as quickly as in a more freely floating regime. Therefore, it takes longer for a decline in the value of the dollar to have a significant effect on the demand for farm exports in these markets.

Illinois' Export Performance

Data on state agricultural exports routinely place Illinois near the top of the ranking. In 1987 the state was third behind California and Iowa in the dollar value of total exports, first in soybean exports, and second, behind Iowa, in exports of feed grains (see Table 3). Together, soybeans and feed grains made up slightly over 84 percent of the agricultural exports of Illinois compared to just over 37 percent for the nation as a whole.

Table 3. Leading Agricultural Export States
(1987, millions of dollars)

State	Rank 1987	Rank 1981	Value of Exports	Primary Products
California	1	3	$2,837.1	Fruits, vegetables, tree nuts, cotton
Iowa	2	1	2,263.6	Soybeans, feed grains, live animals and meats
Illinois	3	2	2,115.3	Soybeans, feed grains, live animals and meats
Nebraska	4	6	1,578.3	Feed grains, soybeans, hides
Texas	5	4	1,521.3	Cotton, hides, live animals and meats
Kansas	6	7	1,513.5	Wheat, hides, live animals and meats
Minnesota	7	5	1,368.4	Soybeans, feed grains, wheat
Indiana	8	8	1,011.9	Soybeans, feed grains, wheat
North Dakota	9	9	947.2	Wheat, feed grains, sunflower seed
Ohio	10	10	921.8	Soybeans, feed grains, wheat
United States			27,873.8	Soybeans, feed grains, wheat

Although Illinois is a top exporter, its share of total US agricultural exports declined from about 8.5 percent in 1981 to slightly more than 7.5 percent in 1987. The greatest portion of this decline can be attributed to the fall in exports of feed grains such as corn. Although Illinois' share of US feed grain exports has remained at 15 percent, the volume of US exports of corn and grains has plummeted from $11.1 billion in 1981 to $4.6 billion in 1987. Illinois exports of grains are now less than one-half their dollar value in 1981. At the same time, Illinois' share of the soybean market has shown only a mild increase in the last two years. The net result has been an overall decline in Illinois exports.

For the last three years, California has held the distinction of being the top exporting state after occupying third place for several years. The shift is a reflection of the changing demand for exports abroad. Brisk demand for cotton, fruits, vegetables, and nuts led to an increase in the value of California's exports of 19 percent between 1986 and 1987. With the exception of a token amount of vegetables and fruits, Illinois does not produce any of these commodities for export.

Because Illinois' range of agricultural exports is rather narrow compared to California's, for example, it has been particularly hard hit by the fall in the US exports of corn, wheat, and soybeans. As other states have learned, it may be in their best interest to promote their own products rather than to depend on efforts at the national level. Such a course of action would be more difficult for Illinois because its exports are rather homogenous. Aside from the results of differing growing conditions, it is difficult to make a case that Illinois soybeans are a different (better) commodity than Iowa soybeans. Soybeans or corn do not differ greatly in quality wherever they are grown. Such an approach may work with products that require some manufacturing or preparation before they are sold abroad. Products such as cheese from Wisconsin or wines from California can be more easily differentiated from similar products produced elsewhere. They differ in quality and variety and have marketable attributes that appeal to consumers with a broad spectrum of tastes and preferences. In the case of Illinois, corn and soybeans do not lend themselves to such forms of marketing.

Conclusion

Markets for US farm products have changed significantly in the last decade. Much of the change is the result of increased competition from abroad in the form of lower costs and increased productivity. As a consequence there has been a continuing period of difficult adjustment. The United States can no longer depend upon demand for grains to sustain its export position, but must instead expand into other markets. The shifting composition of state exports graphically illustrates this change. For many years the grain exporting states, including Illinois, were the chief exporters of farm products. Recently, California, with exports that include only a small amount of wheat, and no soybeans or feed grains, has taken the lead over the other states. Given Illinois' agricultural base and climate, it is difficult to identify the degree to which the state will be able to change the composition of its exports to meet changing world demands.

WILLIAM R. BRYAN

The Value of Low Automobile Interest Rates

The automobile buying consumer is frequently confronted with a choice between a rebate or a financing opportunity featuring a below-market rate of interest. Recently, I looked over several newspapers and was attentive to radio and television commercials. Within a short period I read, heard, and saw the following:

Rebates up to $1,000 or 4.9% A.P.R.
4.9% A.P.R. for 24 months
6.9% A.P.R. for 36 months
7.9% A.P.R. for 48 months
8.9% A.P.R. for 60 months.

How can a person know which alternative is most advantageous? Is it better to accept a rebate at the time of purchase? Or, is it better to accept a reduced rate of interest on borrowed funds? Is it better to borrow for a short period at a low rate of interest, or for a longer period at a somewhat higher rate of interest? As is so often the case, there is no generic answer. Instead, the advantageous choice depends upon the specific set of facts relating to the transaction at hand. But there are ways of analyzing the problem that can be of assistance in deciding among alternatives.

The Value of Favorable Financing

The value of favorable financing depends on three factors. The first consideration relates to a differential between the market interest rate and the favorable financing rate; the second relates to the length of the financing; and the third relates to the amount financed. I present tables, each corresponding to a different repayment period. Each table shows the value of financing subsidies corresponding to alternative market interest rates and alternative favorable financing rates. Each subsidy is stated per $1,000 financed.

Consider the 4 percentage point differential emerging from the combination of a 13 percent market interest rate and a 9 percent favorable financing rate, with a 60-month repayment period (Table 1). That combination of interest rates results in an $87.67 subsidy per $1,000 financed. Thus, for example, if the amount to be financed were $14,000, the total subsidy would be about $1,227 (14 × $87.67). The same 4 percentage point differential, but one resulting from an 11 percent market rate and a 7 percent financing rate results in a slightly larger subsidy ($89.28). The differences in the size of the subsidies among alternative interest rate combinations result from the fact that I have framed the problem in terms of discrete compounding intervals (in years); with continuous

compounding the differences among subsidies would disappear. Even with discrete compounding, the chief consideration relates to the size of the differential, not the specific combination of interest rates from which it is formed.

But the size of a subsidy declines sharply as the repayment period shortens to standardized maturities such as 48, 36, and 24 months. Consider the first example discussed above. The combination of 13 percent and 9 percent with a 48-month repayment period results in a $72.41 subsidy per $1,000 financed, down more than 17 percent from its value with a 60-month repayment period. The same combination of interest rates with a 36-month repayment period results in a $56.22 subsidy. And as the maturity shrinks to 24 months, the value of the subsidy falls to $39.06.

In the introductory paragraph several alternative financing plans were identified. Each successive plan involved a higher interest rate coupled with a longer financing period. Which of these plans would be best? To address this question it is convenient to assume that there is a single market interest rate. For these purposes, I assume that the market interest rate is 14 percent. It is also convenient to round the financing rates to those given in the tables. I round the 4.9 percent rate associated with the 24-month financing period to 5 percent; the 6.9 percent rate associated with the 36-month financing period is rounded to 7 percent; the 7.9 percent rate for the 48-month period is rounded to 8 percent; and the 8.9 percent rate for the 60-month period is rounded to 9 percent.

Given these convenient assumptions, it turns out that the most valuable combination of terms is the one with the longest financing period even though it carried the most narrow interest differential. The subsidy associated with the 5-percentage-point differential between the 14 percent market rate of interest and the 9 percent favorable financing rate for a 60 month financing period has a present value of $107.87 per $1,000 of borrowed funds. By comparison, there is only a $86.26 subsidy associated with the 9-percentage-point differential (a 14 percent market rate and a 5 percent financing rate) for the 24-month loan.

Perhaps it would be helpful to discuss a hypothetical example of a typical automobile transaction. Assume the following set of facts: One, the cost of an automobile in addition to a trade-in is $11,750; two, the market rate of interest for a 48-month installment loan is 14 percent, and the installment rate offered by the automobile dealer is 8 percent; three, the dealer offers a $1,500 cash rebate as an alternative to the attractive financing package.

Which is the most financially attractive alternative? According to Table 2, the value of the subsidy corresponding to a 14 percent market rate and an 8 percent favorable financing rate is $106.62 per $1,000 financed. Hence, for the transaction at hand the present value of the subsidy would be about $1,253. Clearly, the cash rebate is more valuable.

If, however, the financing package were for five years, the comparison would be different. The present value of the subsidy would be $128.58 per $1,000 (Table 1), or a total value of about $1,511.

What the Consumer Needs to Know

The consumer needs to form judgments about three sets of facts: the cost of the automobile with and without favorable financing terms; the advantageous rate of interest along with the market rate of interest; and the amount to be financed along with the length of the financing.

The identification of the alternative set of prices is reasonably straightforward, but may involve tedious shopping around. Typically, there is an explicit choice between favorable financing terms and a rebate. It is possible that there can be additional differences relating to one-on-one bargaining. The identification of alternative financing terms is similarly straightforward, but may require shopping around. There will be a description of the favorable financing package at automobile dealerships offering such packages. The dealer is likely also to be in a position to arrange financing elsewhere at standard (or market) rates. Or, the consumer may wish to arrange for financing at a credit union, a commercial bank, or elsewhere (including the use of past savings). From these alternative sources the consumer can form an opinion regarding what I have referred to here as the market rate of interest. It is at this stage that the consumer is likely to have sufficient information to determine how much is to be financed and for what repayment period.

I do not mean to suggest that all of the factors just discussed can be identified unambiguously. For example, if an individual uses accumulated savings to finance a current purchase, the cost can be viewed as the lost earnings from the savings. But suppose the financial stress resulting from the purchase of the automobile turned out to be the chief factor in moving a household into persistent use of credit card lines of credit. Then might it not be reasonable to regard those

Table 1. Value of Financing Subsidy per $1,000 Financed, 60-Month Repayment Period.

Favorable Financing Rates (In Percent)	*Market Interest Rates (In Percent)*								
	7	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*
3	$92.55	$113.81	$134.39	$154.30	$173.57	$192.22	$210.27	$227.76	$244.69
4	$69.93	$91.73	$112.81	$133.22	$152.97	$172.08	$190.59	$208.51	$225.87
5	$46.97	$69.30	$90.91	$111.82	$132.05	$151.64	$170.61	$188.97	$206.76
6	$23.65	$46.54	$68.67	$90.09	$110.83	$130.89	$150.32	$169.13	$187.35
7		$23.44	$46.11	$68.05	$89.28	$109.84	$129.74	$149.00	$167.66
8			$23.22	$45.68	$67.43	$88.47	$108.85	$128.58	$147.69
9				$23.00	$45.26	$66.81	$87.67	$107.87	$127.43

very high interest rates as the proximate result of the purchase?

In addition, it may be useful to take tax considerations into account. It may be possible to arrange financing through use of a line of credit based on equity in a home. Under certain conditions, interest payments can constitute a tax deduction. If this is the case, the appropriate interest rate for use in Tables 1 through 4 is an after-tax rate, not the market rate.

The consumer should bear in mind that there is a trade-off between the interest rate differential associated with the favorable financing rate and the period of time over which the financing is extended. Given any differential, longer financing periods result in larger subsidies. Given any financing period, wider interest differentials result in larger subsidies. Because of these trade-offs, the consumer must not be distracted by the glamour of low interest rates. For, as the examples given here demonstrate, it is easy to find very attractive subsidies with a combination of narrow interest differentials and long financing periods.

Concluding Remarks

The automobile industry has made artful use of attractive financial packages and rebates as a means of improving the marketing of automobiles. As in other marketing applications, a strategy has emerged in which the consumer has been presented with a bewildering array of choices. In some marketing applications, the choices involve explicit differences in quality; in other instances, nothing more is at stake than simple personal preferences. Sometimes the consumer is in a good position to evaluate alternatives; in other instances he or she is not. The consumer faces substantial difficulty in deciding among financing alternatives, or in choosing between a rebate or a favorable financing plan. Although there are explicit definable pecuniary implications, the necessary analysis is somewhat technical.

As is often the case, the superficially attractive alternatives do not necessarily hold the most value for the consumer. But each case must be considered separately, with the facts relevant to the individual consumer for the specific transaction at hand. The tables presented here can be useful in evaluating potential transactions.

Table 2. Value of Financing Subsidy per $1,000 Financed, 48-Month Repayment Period.

Favorable Financing Rates (In Percent)	*Market Interest Rates (In Percent)*								
	7	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*
3	$75.67	$93.34	$110.54	$127.28	$143.59	$159.47	$174.94	$190.00	$204.68
4	$57.09	$75.12	$92.67	$109.75	$126.38	$142.58	$158.36	$173.73	$188.70
5	$38.29	$56.68	$74.57	$92.00	$108.96	$125.49	$141.58	$157.25	$172.52
6	$19.26	$38.01	$56.26	$74.03	$91.33	$108.18	$124.59	$140.57	$156.15
7		$19.12	$37.73	$55.84	$73.49	$90.67	$107.40	$123.70	$139.58
8			$18.97	$37.44	$55.43	$72.94	$90.00	$106.62	$122.81
9				$18.83	$37.16	$55.02	$72.41	$89.34	$105.84

Table 3. Value of Financing Subsidy per $1,000 Financed, 36-Month Repayment Period.

Favorable Financing Rates (In Percent)	*Market Interest Rates (In Percent)*								
	7	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*
3	$58.16	$71.97	$85.49	$98.74	$111.72	$124.44	$136.90	$149.11	$161.09
4	$43.82	$57.84	$71.56	$85.01	$98.19	$111.11	$123.76	$136.16	$148.31
5	$29.35	$43.57	$57.51	$71.16	$84.54	$97.65	$110.50	$123.08	$135.42
6	$14.74	$29.18	$43.33	$57.19	$70.77	$84.07	$97.11	$109.89	$122.41
7		$14.66	$29.01	$43.08	$56.86	$70.37	$83.60	$96.57	$109.28
8			$14.57	$28.85	$42.83	$56.54	$69.97	$83.13	$96.03
9				$14.49	$28.68	$42.59	$56.22	$69.57	$82.66

Table 4. Value of Financing Subsidy per $1,000 Financed, 24-Month Repayment Period.

Favorable Financing Rates (In Percent)	*Market Interest Rates (In Percent)*								
	7	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*
3	$40.01	$49.66	$59.18	$68.56	$77.81	$86.93	$95.93	$104.80	$113.55
4	$30.10	$39.85	$49.47	$58.94	$68.29	$77.51	$86.60	$95.56	$104.39
5	$20.13	$29.98	$39.69	$49.27	$58.71	$68.02	$77.20	$86.26	$95.19
6	$10.09	$20.05	$29.86	$39.53	$49.07	$58.48	$67.76	$76.90	$85.92
7		$10.05	$19.97	$29.74	$39.38	$48.88	$58.25	$67.49	$76.60
8			$10.01	$19.89	$29.62	$39.22	$48.68	$58.02	$67.22
9				$9.97	$19.81	$29.50	$39.06	$48.49	$57.79

The Value of a Below-Market Interest Rate

The value of a subsidy stemming from a below-market interest rate can be calculated as follows:

First, X_m, the monthly payment based on a market rate of interest, r_m, is given as

$$(1) \qquad X_m = \left[\frac{Fr_m}{\left(1 - \frac{1}{(1 + r_m)^n}\right)}\right],$$

where f is the amount financed and n is the repayment period.

Next, X_f, the monthly payment based on a favorable financing rate of interest, r_f, is

$$(2) \qquad X_f = \left[\frac{Fr_f}{\left(1 - \frac{1}{(1 + r_f)^n}\right)}\right].$$

The monthly subsidy, X_s, can be thought of as the difference between the monthly payment based on the market rate and the monthly payment based on the favorable financing rate—that is, $X_s = X_m - X_f$. The present value of the monthly subsidy is given by

$$(3) \qquad PV_s = X_s \left[\frac{1 - \frac{1}{(1 + r_m)^n}}{r_m}\right].$$

Substituting (1) and (2) into (3), we get

$$(4) \qquad PV_s = F\left\{1 - \left(\frac{r_f}{r_m}\right)\frac{\left[1 - \frac{1}{(1 + r_m)^n}\right]}{\left[1 - \frac{1}{(1 + r_f)^n}\right]}\right\}.$$

The subsidies in Tables 1 through 4 are calculated by setting F to \$1,000, then using alternative values for r_f, r_m and n. Consider, for example, the 13 percent market interest rate and the 8 percent favorable financing rate shown in Table 1.

$$(5) \qquad PV_s = \$1{,}000\left\{1 - \left(\frac{.08/12}{.13/12}\right)\frac{\left[1 - \frac{1}{(1 + (.13/12))^{60}}\right]}{\left[1 - \frac{1}{(1 + (.08/12))^{60}}\right]}\right\}.$$

$$\approx \$108.85.$$

Illinois Business Indexes

The outlook for the Illinois economy remains unclear based on the BEBR's composite leading indicator series. The leading indicator series is constructed to provide early detection of upturns or downturns in the state economy. The behavior of the series since 1972 compared to the subsequent performance of the economy shows that a major change in economic activity can be predicted when the current indicator crosses the trend indicator for four or more months. However, as shown in Chart 1, the series recently crossed in October 1988 and again between November and December 1988. Since then the current indicator has been above the trend indicator. If the current indicator remains above the trend indicator in February and March, a continuation of the current economic expansion would be predicted. However, such an interpretation would be premature at this time.

Individual indicators document the recent health of the state economy. As shown in Chart 2, Illinois unemployment has been declining and is approaching the national level for the first time in several years. Manufacturing employment has grown steadily over the recent past as can be seen in the statistical table. Per capita, inflation-adjusted, personal income has grown in each of the last four quarters. Construction remains strong and has been on an upward trend for the past six months (Chart 3).

As the length of an economic expansion grows, fears of inflationary pressures on the economy usually develop. To examine this possibility Chart 4 shows the recent time path of the Consumer Price Indexes for the north central United States urban areas under 50,000 in population and for the Chicago metropolitan area. The Chicago CPI remains below its September 1988 peak. However, other indexes reveal consistently increasing price levels. A key question regarding economic health is whether there has been an acceleration in price level increases. Over the past several years the rate has been rather steady. If prices begin to increase at an increasing rate, this would signal a meaningful change in economic conditions. As matters now stand, it is too early to identify a change in inflationary conditions. The Illinois economy has enjoyed a healthy expansion in the recent past, but the future of this expansion is unclear.

Charts 5 and 6 show the seasonal pattern of real tax revenues. The pattern for personal income taxes is relatively stable, while that for the sales tax shows considerable variation.

ILLINOIS BUSINESS INDEXES

	Percent Change Jan. 1988-Jan. 1989	*Jan. 1989*	*Dec. 1988*	*Nov. 1988*	*Oct. 1988*	*Sept. 1988*	*Jan. 1988*	*Dec. 1987*
Leading Indicator (Current Indicator)	6.19[a]	20.09	18.65	13.38	13.37	12.79	13.90	11.73
Leading Indicator (Trend Indicator)	4.91[a]	16.58	15.54	13.82	13.37	13.61	11.67	10.83
Employment-manufacturing (in thousands)[b]	1.74	976	978	950	949	950	959	937
Average weekly hours-manufacturing[b]	-2.14	41	42	42	41	42	42.0	42
Weekly earnings-manufacturing[b]	-1.79	$453.74	$461.20	$459.51	$456.50	$461.34	$462.00	$481.60
Help wanted advertising-Chicago (1967 = 100)[c]	-2.59	113	105	105	110	110	116	108
Help wanted advertising-St. Louis (1967 = 100)[c]	10.00	77	74	67	78	68	70	68
Retail sales (in millions)[d]	5.11	$5,575	$7,730	$6,309	$6,224	$6,026	$5,304	$7,504
Coal production (in thousands of tons)[b]	-1.29	4,837	4,798	4,839	5,255	5,100	4,900	5,083
Petroleum products (in thousands of barrels)[b]	-12.20	1,800	1,900	1,930	1,950	2,000	2,050	2,100
Vendor performance[e]	N/A	N/A	56%	56%	60%	64%	68%	71%
Building permits (in thousands)								
Residential housing units	13.28	1.604	5.630	3.300	4.262	4.373	1.416	2.513
Value of residential housing	36.86	$164,107	$408,172	$290,926	$374,593	$361,047	$119,906	$205,704
Value of nonresidential construction								
Industrial buildings	429.12	$39,663	$94,037	$38,612	$63,244	$27,897	$7,496	$27,143
Office, banks, and professional buildings	61.97	$27,802	$136,165	$81,475	$65,160	$71,098	$17,165	$26,725
Stores and other mercantile buildings	107.63	$26,998	$77,815	$37,752	$56,098	$62,600	$13,003	$26,366
Other	93.65	$3,811	$3,610	$5,248	$5,028	$4,728	$1,968	$2,059
Consumer price index (1982-84 = 100)								
North Central US	4.67	118.7	118.2	118.1	118.1	117.7	113.4	113.3
North Central/population more than 1,200,000	5.00	119.8	119.2	119.1	119.1	119.0	114.1	113.9
North Central/population 360,000 to 1,200,000	4.41	118.3	118.2	118.0	118.2	117.0	113.3	113.0
North Central/population 50,000 to 360,000	4.76	118.8	118.2	118.4	117.7	117.4	113.4	113.6
North Central/population less than 50,000	3.44	114.4	114.0	114.1	114.2	114.2	110.6	110.9
Chicago	5.38	121.5	121.3	121.0	121.6	122.0	115.3	115.7
St. Louis	4.41	118.4	—	118.3	—	117.3	113.4	—
		1988:III	1988:II	1988:I	1987:IV	1987:III	1987:II	1987:I
Personal income (in millions)[b,f,g]	6.56	$202,735	$200,993	$199,545	$197,917	$190,246	$187,332	$186,227
Per capita personal income[b,f,g]	6.26	$17,421	$17,283	$17,171	$17,043	$16,394	$16,155	$16,071

[a]Represents absolute change (percent change not relevant). [b]Recent month is preliminary figure. [c]The Conference Board, *Help Wanted Advertising*, November 1988. [d]Latest month projected by BEBR. [e]Percentage of companies receiving slower deliveries. Series revised after December 1988. [f]Seasonally adjusted at annual rates. [g]Percent change between 1987:III and 1988:III.

Chart 1. Composite Leading Indicators
(average percent in base indexes)

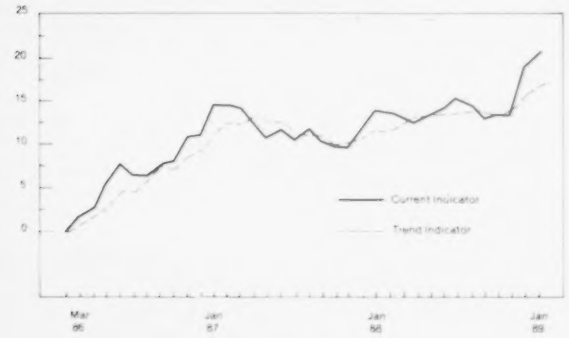


Chart 2. Unemployment Rates: Illinois vs. US
(seasonally adjusted)

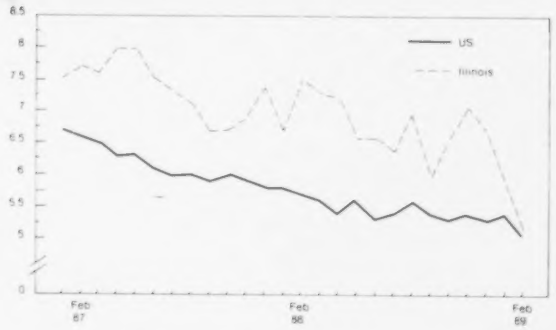


Chart 3. Residential Building Permits
(12 month moving average)

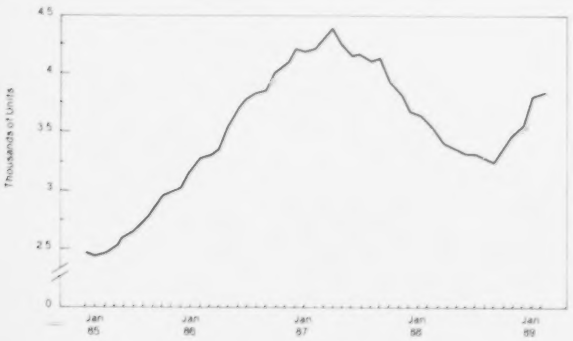


Chart 4. Selected CPI, Chicago vs. North Central US

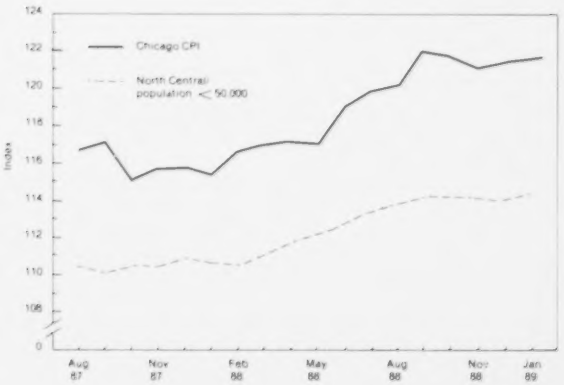


Chart 5. Illinois Retail Sales Tax Receipts
(in millions of constant 1967 dollars, rate adjusted)

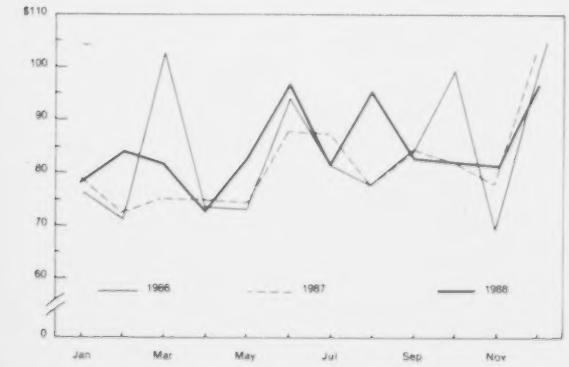
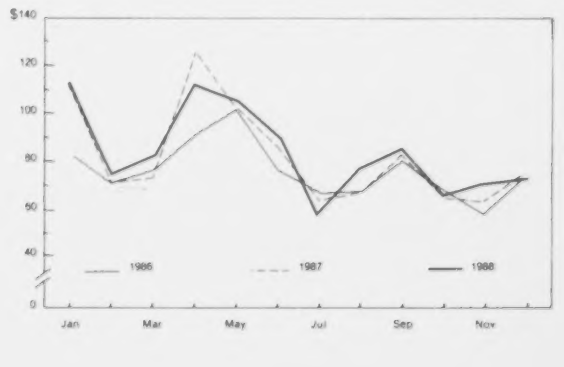


Chart 6. Illinois Personal Income Tax Receipts
(in millions of constant 1967 dollars, rate adjusted)



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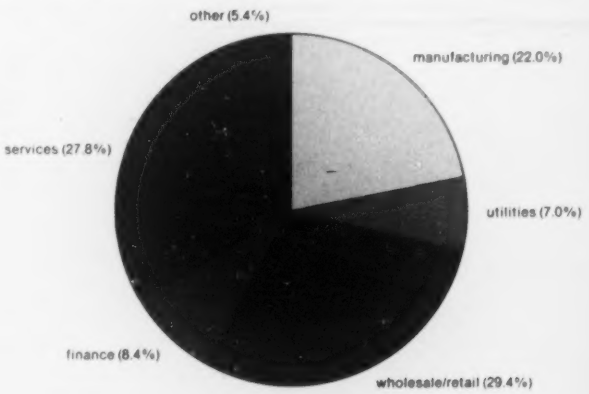
Illinois Economic Outlook

A slowdown in Illinois employment growth is predicted by the Illinois Econometric Model. The total employment level for the state is expected to rise by less than 10 thousand during 1989, reflecting divergent growth rates among the sectors of the economy. Manufacturing is forecasted to lose about 27 thousand jobs while employment increases in finance, services, and wholesale and retail trade are expected to show offsetting gains.

The chart illustrates the relative shares of each sector in total private nonfarm employment in Illinois. Services and wholesale and retail trade are the largest employers, accounting for slightly less than 60 percent of all nonfarm employment. It is interesting to note that although wholesale and retail trade account for nearly 30 percent of employment, this sector receives only 20 percent of personal income. The presence of part-time workers and lower wages compared to other sectors account for this difference.

Illinois Employment
(relative share by sector)



Illinois Seasonally Adjusted Employment

	History				Forecast			
	88:I	88:II	88:III	88:IV	89:I	89:II	89:III	89:IV
Total private nonfarm (thousands)	4,250.9	4,279.0	4,307.8	4,327.3	4,334.7	4,336.7	4,337.0	4,336.4
Mining	24.1	23.9	23.5	23.2	22.9	22.8	22.8	22.8
Construction	202.0	206.2	206.1	208.6	206.3	202.6	198.3	193.7
Manufacturing	941.3	945.3	947.7	950.7	947.5	940.1	932.1	923.4
Durable	571.6	574.7	576.2	578.8	577.7	572.5	567.6	561.7
Primary metals	54.6	54.7	54.9	55.2	55.1	54.9	55.0	54.8
Fabricated metals	108.7	108.9	109.6	110.6	110.6	109.6	108.9	108.2
Nonelectrical machinery	137.7	138.8	140.3	140.2	141.9	141.6	140.3	137.1
Electrical machinery	121.9	122.4	122.2	122.9	121.7	120.0	118.8	118.1
Miscellaneous durables	149.1	150.2	149.3	149.6	148.3	146.4	144.5	143.5
Nondurable	370.0	370.5	370.9	372.1	369.7	367.6	364.5	361.7
Food products	91.2	90.9	89.9	90.1	90.1	89.6	88.9	88.1
Printing and publishing	108.9	109.6	109.9	110.0	109.9	109.7	109.1	108.5
Chemicals	57.8	58.1	58.5	58.7	58.5	58.1	57.8	57.6
Miscellaneous nondurables	111.4	112.1	112.7	112.3	111.2	110.1	108.7	107.5
Utilities and transportation	300.4	301.6	302.8	302.6	302.2	301.4	300.6	299.8
Wholesale and retail trade	1,245.6	1,255.8	1,268.5	1,272.5	1,274.8	1,276.8	1,278.9	1,281.1
Finance, insurance, and real estate	363.7	363.5	363.3	364.4	367.1	369.5	371.6	373.5
Services	1,174.4	1,183.5	1,195.3	1,204.2	1,213.9	1,223.3	1,232.7	1,242.1

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Life After Death of a Military Base: The Case of Chanute Air Force Base, Rantoul, Illinois

When Chanute Air Force Base, located in the small east-central Illinois community of Rantoul, appeared this past December on a list of bases suggested for closure, the dominant response was one of gloom and pessimism. At first glance, the depressing assessment offered by village leaders and others might appear to have been justified. During fiscal year 1988 (FY88) alone, Chanute had a payroll of $123.6 million. Various studies place the number of dollars pumped directly into the local economy somewhere between $107 million and $135 million. A study by two University of Illinois researchers, Geoffrey Hewings and Dan Spiegel, cites the potential for Champaign County population to decrease by as much as 9 percent, sales volume by 7.4 percent, and a debasing of local property values by 20 percent.

A local bank president expressed the view that the proposed closing of the base is "the biggest negative [financial impact] to hit Champaign County since the Great Depression" and that "The effect on Rantoul is the same as it would be to Champaign-Urbana if the University [of Illinois] closed." Such discouraging judgments are rampant throughout central Illinois as members of the local communities mull over their expected losses.

Rather than to lament the immediate losses that are likely as closure proceeds, the goal of this article is to consider the possibility that Chanute Air Force Base can be shut down without inordinant economic distress. Indeed, there is a view that the base itself is a hindrance to long-term real economic growth. As private industry occupies Chanute, the Village of Rantoul can benefit from an enhanced and diversified tax base. It is reasonable to believe that there would be a larger income and employment multiplier as a less transient, more stable population takes root in the community.

The closure of a military base leading to the eventual rejuvenation of a community is not without precedent, as will be made clear by example below. In fact, municipalities that were once dependent on military expenditure for their livelihood now find themselves enjoying economic growth and prosperity far exceeding the levels experienced when they depended on a base.

This article begins with a brief overview of the present economic and demographic conditions in the Village of Rantoul and in the surrounding county. It then examines various mitigating factors that are expected to lessen the adverse impact of base closure on the region. Finally, it presents various short- and long-run economic scenarios for Rantoul and Champaign county.

Overview of Rantoul and Champaign County

The Village of Rantoul is located in the east-central Illinois county of Champaign, 120 miles south of Chicago, 185 miles northeast of St. Louis and 100 miles west of Indianapolis. According to the most recent official census in 1985, the village population stood at 20,641. This figure includes the base population, both permanent party (a total of 3,250 persons, including dependents) and students (approximately 4,500).

The population of Champaign county in 1986 was approximately 171,100. The two largest communities within the county are the adjacent cities of Champaign and Urbana, with 1980 census enumerations of 58,133 and 39,676, respectively.

The unemployment rate in Rantoul has traditionally been low, usually between 5 and 6 percent. Champaign county as a whole has one of the lowest unemployment rates in the state at 4.2 percent for 1988, second lowest of all 102 Illinois counties, and is well below the state and national figures for March 1989 of 5.4 percent and 5.3 percent, respectively.

Rantoul is not entirely dependent on Chanute for employment. Table 1 presents a list of major nonmilitary, nonservice employers. These six industries along with Chanute (excluding military personnel) provided about 50 percent of the employment for Rantoul's average 1988 labor force of 5,972.

Table 1. Major Nonmilitary and Nonservice Employers in Rantoul

Employer	*Major Product*	*Employees*
Coradco	Windows/Doors	750
Rantoul Products	Chrysler Jeep parts	540
Bell/Vetter	Helmets	450
Eagle Wings Industries	Diamond Star supplier	250*
Iodent	Health & Beauty Aids	140
Combe Laboratories	Proprietary Toiletry	150

*Total employment expected as of summer 1989.
Source: *Rantoul Guide & Directory, 1988.*

During 1988, Chanute employed 2,383 permanent party military personnel, 991 appropriated-fund civilians, 542 nonappropriated fund/base exchange personnel, 864 contract civilians, and 63 other civilians. In addition, there were, on average, 2,759 students enrolled during this period.

The vast majority (86.6 percent) of permanent party military and students, totaling 4,453, resided on base. Of the 13.4 percent (689 people) living off base, 85.5 percent, or 589, occupied residential housing in the village itself. This means that only a small minority of all military personnel claim the village as their residence. Moreover, this number is but 2.9 percent of the total Rantoul population (including the base) and still only 3.8 percent after adjusting for the 5,142 permanent party and students at Chanute. As for appropriated-fund civilians, only 48.9 percent (485 individuals) lived in Rantoul.

Immediate Impact

According to the most pessimistic views, Champaign County, in general, and the Village of Rantoul, in particular, will suffer a significant negative impact from base closure. It is asserted that the Commission on Base Realignment and Closure, which recommended Chanute for closure, is grossly mistaken in its claim that the closure would have only a "moderate" impact on the local economy.

"Moderate" is a relative term, depending on one's perspective, as was evidenced by the comments made by local business leaders. In what length of time will the period of "moderate" impact pass? Will this period be followed by another of greater decline or by revitalization of the community?

A report on the matter by University of Illinois researchers Geoffrey Hewings and Dan Spiegel entitled "Phase I: Report to the Village of Rantoul, Preliminary Impact Report of the Proposed Closure of Chanute AFB on the Village of Rantoul" states that the closure will have a "significant negative impact [on Champaign County]" and that the "economic and social impacts will be most severe in the Village of Rantoul." Below are highlighted some of effects cited by Hewings and Spiegel:

- Sales volume in Champaign County is projected to decline by 7.4 percent while local merchants estimate that sales in Rantoul will decrease between 20 and 50 percent.
- Population decline in the county may reach 9.0 percent while the decline in Rantoul could be greater than 50 percent.
- Municipal property tax base, sales tax revenues, and income tax reimbursements would all decline in the years following a base closure.
- Estimates indicate that nearly one-third of the village's 3,075 single-family homes would be for sale following a base closure.
- Local residential and commercial property values may decline more than 20 percent, which, after three-year averaging, would substantially reduce the village's tax base. Hardest hit would be Rantoul's 1,551 multifamily residences, which were built in large part to serve the base population.
- Rantoul derives 22.0 percent of its municipal revenues from a local sales tax. Two of the three biggest contributors to sales tax revenue expect decreases in sales of 20 percent to 50 percent.
- A substantial decrease in population before the 1990 Census would result in a sharp decline in the level of income tax revenues from the state, which in 1987 accounted for 14.5 percent of Rantoul's total revenues.
- The public schools may lose between 43 percent and 65 percent of attendance. Teaching staff and extracurricular activities will be reduced substantially.

According to Hewings and Spiegel, these are the most important of the immediate effects on the county and the village. Unfortunately, the study has been interpreted as suggesting that the effects of the closure are simultaneous and *irrevocable*. Such a conclusion is not necessarily justified.

Certainly the effects described above represent a worst-case scenario. Moreover, the scenario appears to have been played out in a world in which the village simply awakens to the realization that the base was abandoned overnight. Because of a heavy reliance on interviews with local retailers attempting to gauge the impact of closure, the economic impact estimates are likely to be overestimated. But in fact, the base closure will proceed over a period of several years and will thus be anything but sudden or unanticipated.

Additionally, the figures cited by Hewings and Spiegel are likely to over-estimate the true impact due to the terms of closure specified in the closure bill recently deliberated in Washington. Under these terms, no action toward closure can be taken at the affected bases before 1 January 1990, with closure to be completed by 30 September 1995. Because of the time required to construct facilities at other bases to replace those currently located at Chanute, the village is likely to find itself with nearly the full five year period in which to find and attract suitors to the base.

The closure will be staggered, with sections of the base withdrawing as facilities become available elsewhere. Because of the staged withdrawal by the Air Force, the immediate impact is unclear. It is even difficult to determine what or when the relevant "immediate period" is, given the length of the closure period. It is quite clear, however, that a staged withdrawal increases the adjustment period available to the community and county and can have the effect of substantially mitigating the impacts of closure.

Also because of the staged withdrawal, portions of the base will become available before the terminal date of 30 September 1995. As tracts become available, they may well be leased by replacement industries with the option to purchase after closure is complete. This would be beneficial from the point of view of both the village and the government. The village would have solved many of the problems listed above as those left unemployed by closure are employed by incoming businesses or retain their former positions (as might be the case for municipal employees). At the same time, the Department of Defense would collect rent as closure proceeded. Lessee arrangements would, thus, have a substantial buffering effect on the economic impact of the closure. Indeed, the village might experience a tax windfall after the tracts of land on what is now Chanute AFB become taxable.

Mitigating Factors: A Soft Landing

In the previous section it was stated that immediate impacts from the base closure would be substantially lessened by a staggered closure schedule at Chanute. The staged closure, however, is only one of numerous mitigating factors that will aid in softening the impact. Other factors, also cited by Hewings and Spiegel, are listed below:

- The 1990 Census will be complete long before closure has been effected. Because of this, the village (as well as all other affected communities) will continue to receive income tax disbursements from the state. In fact, Rantoul will receive phantom payments for the second half of the 1990s. That is, disbursements will be made on behalf of thousands of people who no longer even reside in Rantoul. Even now the village receives tax reimbursements based on a population of about 20,000 while providing municipal services to only about 10,000. The village can thus expect to retain most of the 14.5 percent of total revenues it receives from the state.
- As firms occupy vacant sections of Chanute, workers there will create a demand for housing and construction services in the community. In fact, because 100 percent of all employees of private industry will live "off-base", so to speak, an increase in demand is virtually guaranteed. Because of this 100 percent "off-base" percentage, compared with only 13.4 percent now, the market for available housing is likely to firm up quite rapidly.
- Rantoul's 1987 property tax levy (payable in 1988) was second lowest in Champaign County. The aggregate tax rate on property in Rantoul was 5.73 percent, 7.1288 percent in Champaign, and 8.2618 percent in Urbana. At this rate, a $70,000 home in Rantoul, assessed at one-third of value would pay only $1,337. This compares with nearly $1,700 in Champaign and over $1,900 in Urbana for a home of equivalent value.
- The opening up of relatively affordable housing in Rantoul may attract new residents (or even residents of other communities) of the county away from nearby Champaign-Urbana. The low tax levy is also likely to serve as an impetus to relocate to the village. The net effect is that new residents, who either are associated with incoming Rantoul industries or others outside of the community such as the nearby University of Illinois, will absorb much of the housing made available due to the closure. Once again, because housing will become available on a gradual basis as a result of the staged closing, it is unlikely that there will be a large stock of vacant housing at any given moment.
- Even in a worst-case scenario, that of unsalable properties, the Office of Housing and Urban Development would take control with the understanding that property taxes would continue to be paid by the Department of Defense.
- Rantoul stands to receive increased utility tax revenues derived from Rantoul Area Industrial Development Park as firms located there move toward operation at full capacity.

The list of mitigating factors is augmented by the present good financial standing of the community in terms of its net indebtedness and level of expenditures. Relevant factors in this regard include the following:

- The village does not provide municipal services to the base, nor is it obliged to do so until closure is completed and the base is converted for use by private interests.

- According to the village Comptroller, Rantoul's infrastructure will not require any substantial capital outlays in the near future.
- While fire protection expenditures may need to be maintained at current levels for geographic reasons, there is no reason why police expenditures need to be maintained at current levels if there is substantial population loss.
- Rantoul's only major capital debt is a regional waste water treatment facility that the Air Force and Rantoul financed jointly. The Air Force is obligated to continue payment on this debt in the future. In addition, the village will be free to assess a sewer tax to occupants of the base following closure.

It may appear that this has been an overly optimistic assessment of the ability of the village to attract industry to replace Chanute AFB. However, it appears that optimism is justified in light of Rantoul's favorable locale; its friendly industrial environment and extant industrial base; its attractive tax climate; its successful adjustment to a substantial personnel loss at Chanute for the past several years (see Table 2); and historical precedent involving successful and lucrative transitions for communities having undergone similar closures in the past.

Table 2. Population Trend at Chanute AFB: FY84–FY89

	FY84	FY85	% Change 84–85	FY86	% Change 85–86	FY87	% Change 86–87
Permanent Party	2,304	2,351	2.0	2,467	4.9	2,447	−1.0
Students	4,009	4,607	14.9	4,711	2.3	4,227	−10.3
Civilians	1,223	1,208	−1.2	1,167	−3.4	1,094	−6.3

	FY88	% Change 87–88	FY89	% Change 88–89	% Change 86–89
Permanent Party	2,274	−7.1	2,206	−3.0	−10.6
Students	3,628	−14.2	2,759	−24.0	−41.4
Civilians	1,022	−6.6	972	−4.9	−16.7*

*This figure is −20.5% in the period between FY84–FY89.

Source: Modification of Table 1 in Geoffrey Hewings and Dan Spiegel, "Phase I: Report on the Village of Rantoul. Preliminary Economic Impact Report of the Proposed Closure of Chanute AFB on the Village of Rantoul," 1 March 1989.

With regard to locale, it has been pointed out that Rantoul is reasonably close to major midwestern cities such as Chicago, St. Louis, and Indianapolis. In addition, Rantoul is located on or near several major interstate highways. The village itself is located on Interstate 57, which provides a direct north-south route between Chicago and New Orleans. US Routes 136 and 45 also pass directly through town. Nearby, are Interstates 72 and 74, which merge with Interstate 57 in Champaign a few miles to the south. Also, rail service is provided by Illinois Central Railroad and Amtrak. Air service is easily accessed from the University of Illinois' Willard Airport, which is serviced by several major carriers such as TWA, United, American, Piedmont, and Midway Airlines.

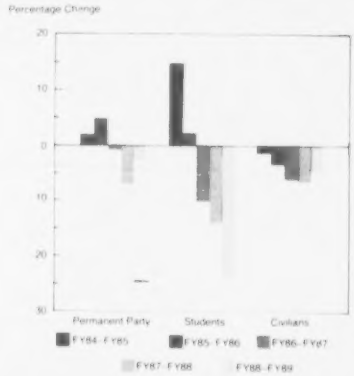
The village can exploit its proximity to the Champaign-Urbana area, home to the University of Illinois. Not only will Rantoul provide an alternative housing market for those associated with the university, but vacant space at the base would provide an excellent low-cost locale for spin-off industries and for firms wishing to work in close association with university researchers.

The very existence of its present industrial base constitutes the second reason for maintaining optimism regarding the ability of the village to attract new industry. Partly through impetus generated by threatened closures in previous years, the village has successfully attracted and fostered a substantial and diverse industrial base for a community of its size (see Table 1). Because firms have elected to locate in Rantoul and because they have remained in the community as they have grown, it is evident that the business climate in the village is quite favorable toward industry.

Because Chanute AFB lies entirely within village boundaries, the village will gain 100 percent jurisdiction over land usage after closure is completed. As a result, it will be able to offer lucrative tax incentives as well as amicable zoning ordinances.

A fourth reason for maintaining optimism is the successful adjustment of the village to substantial declines in military personnel over the past few fiscal years. Despite losses of several thousand military personnel, unemployment remains low and the village government financially sound. The chart and Table 2 clearly show significant downward trends in permanent party, student, and civilian populations at Chanute for each of the last three fiscal years and for the past five years in the case of students. Since FY86, Chanute has lost more than 41 percent of its student population, nearly 11 percent of permanent party personnel, and since FY84 over 20 percent of its civilian work force.

Population Trend at Chanute AFB: FY84–FY89



There is ample evidence from similar closures of military establishments to suggest that there truly is life after the death of a base. Below are examples chosen to emphasize the fact that communities far more isolated and far worse situated than Rantoul can and do prosper after closure.

Chippewa County, Michigan had been the home of Kincheloe Air Force Base until it closed in the 1960s. The year before closure the county had about 9,000 persons employed out of a labor force numbering around 12,000, with a 21 percent unemployment rate. Today, the county has an unemployment rate of only 7.4 percent with 13,425 of the 14,500 there employed. Another 400 to 500 people are expected to be added to payrolls during 1989. What made Chippewa County so successful in adjusting to life without the Air Force? It certainly is not because Kincheloe was located on high priced real estate in suburban Detroit or Ann Arbor. In fact, Chippewa County is located on the northeast tip of Michigan's Upper Peninsula, hundreds of miles from any major city.

In 1965 Schilling AFB in Salina, Kansas, shut down. Salina is an isolated community located 100 miles north of Wichita and 160 miles west of Kansas City and buried deep within the American wheat belt. Upon closure of the base, the community lost a large portion of its population. But today the community is thriving. More than 90 manufacturers have taken over what was once Schilling AFB. The manufacturers employ nearly 5,000 people.

Bangor, Maine, located in the east-central portion of the state, is another out-of-the-way spot. Bangor was home to Dow AFB until its closure in 1968. The community used its relative isolation in the extreme northeastern United States to its advantage. Today, 400,000 passengers per year pass through what is now an international airport located at the former site of the air base.

Bases that are located in heavily urbanized areas tend to have developers lined up to purchase property. This is typified by Fort Sheridan, the other Illinois installation marked for closure. Sheridan is located on 7.5 miles of lakefront property along Lake Michigan in the high-priced Chicago suburbs of Lake Forest and Highwood Park. According to one Wall Street Journal Report, at least one developer sees the property as an excellent opportunity to cash in. The developer has placed over half a million dollars in escrow as a proposed downpayment and has offered the Pentagon an unsolicited bid for the property of more than $52 million.

This is just a partial list of success stories from communities that have experienced a base closure. The first three were chosen to illustrate that even far-flung places can recover and actually benefit from closure. Most important is the fact that these communities are no longer dependent on a military base for their livelihood. They now benefit from a diversified and stable economic environment.

Success did not simply come unsolicited to the doors of these communities. Rather, the communities had to work hard to create workable solutions to their problems. All of the successful communities agree that initiative and quick action are key elements to survive closure and to benefit from it. The successful communities formed economic plans for base redevelopment immediately upon news of a closure. All emphasize the role of rapid mobilization of the entire community and the heavy marketing of the base as an asset.

Based on similar experiences with closures in the 1960s, the US Defense Secretary's Commission on Base Realignments and Closure cites five important steps for the redevelopment of military installations.

- Form a local organization to provide strong leadership and overall policy direction.
- Create a recovery action plan for redeveloping the former military facility and for attracting jobs.
- Focus an economic recovery effort on the entire community, taking into account the transportation network, public facilities and services, health care, housing and schools, and other attributes.
- Demonstrate a capacity to engage and sustain new business growth through intensive, ongoing, economic development programs.
- Obtain federal and state participation to buttress local efforts by responding on a priority basis to the key actions identified in the community recovery program.

A Long-Run Scenario

What can the Village of Rantoul expect in the years following closure? If the community is successful in attracting lessee-occupants for the base before closure, the long-run is not at all distant. As a result, the village can undergo a continual adjustment process as private enterprise supplants military operations. It is important to acknowledge that private expenditures do not need to replace military expenditures dollar for dollar. In fact, even if fifty cents were spent in Rantoul by new industry for each lost dollar of aggregate military expenditure, the village might be better off. Such a result averages by virtue of enhanced multiplier effects stemming from stable population (see the box). A privately based economy would be more property-asset intensive (a result of the previously mentioned fact that all those employed would be living "off base"). Enhanced multiplier effects can take several forms including income, employment, and taxation.

Income multiplier enhancement will be a result of a higher proportion of dollars being poured directly into the community. For example, if expenditures on Chanute totaled $100 million dollars and half of it were spent in the local economy, then the total income generated from both the direct and indirect effects of base expenditure, abstracting from taxes, would be $200 million (see Table 3). However, if 75 percent of income generated through private sources totaled $50 million, the net result obtained by adding all indirect effects to the direct effect would sum to the same $200 million figure.

Similarly, multiplier effects can be found for employment and taxation. Because a larger proportion of personal income is expended locally with an industrially based economy, a greater demand for local goods and services is generated as a result. In turn, this creates a larger number of employment opportunities than could ever have otherwise existed in a military expenditure dependent economy. With each additional purchase in the village, sales tax receipts too would accrue to previously unattainable levels.

The Multiplier Effect

When an airman walks into a local bar and lays down $1 for a bottle of beer, that same dollar now becomes income to the bar owner. The bar owner in turn keeps some part of that dollar as his profit and applies the rest toward expenses. A bartender, whose wages were partially derived from that one dollar spent by the airman, now uses it to buy, say, milk at the local grocery. The grocer retains some as profit and uses the rest to meet expenses, to the local dairy farmer, for example.

This cycle can be traced through an infinite number of rounds, with some proportion of the initial $1 in expenditure becoming another's income somewhere down the line. As a specific example, let us trace the effect of $100 million expended directly into the local economy. It is easily seen in Table 3 that when a larger proportion of income is spent in the community, that the net effect is a substantial gain in the gross income of that community. Similarly, a rise in the proportion of wages expended locally from 50 percent to 75 percent raises net income by $14,607 in the long run (exactly the average military wage). Because a larger proportion of military expenditures are likely to be spent on base and the fact that most airmen do not consume housing or other major expense items in the local market, the net effect for a given increase in military expenditure is smaller than for the same increase in private expenditure.

Table 3. Military vs. Nonmilitary Multiplier Effects[ab]

	Multiplier Effects if 50% of Expenditures are Local		*Multiplier Effects if 75% of Expenditures are Local*	
Round	*Initial Expenditure*	*Aggregate Change*	*Initial Expenditure*	*Aggregate Change*
1	$100.00	$100.00	$100.00	$100.00
2	50.00	150.00	75.00	175.00
3	25.00	175.00	56.25	231.25
4	12.50	187.50	42.19	273.44
5	6.25	193.75	31.64	305.88
All later rounds	6.25	200.00	94.92	400.00

	Multiplier Effects of Airman with Income of $14,607[c] (spending 50% of income locally)[d]		*Multiplier Effects of Nonmilitary Employee with Income of $14,607 (spending 75% of income locally)*	
Round	*Initial Expenditure*	*Aggregate Change*	*Initial Expenditure*	*Aggregate Change*
1	$7,303.50	$7,303.50	$10,955.25	$10,955.25
2	5,477.63	12,781.13	8,216.44	19,171.69
3	4,108.22	16,889.35	6,162.33	25,334.02
4	3,081.17	19,970.52	4,621.75	29,955.77
5	2,310.88	22,281.40	3,466.31	33,422.08
All later rounds	6,932.60	29,214.00	10,398.92	43,821.00

Total Difference = $43,821 − $29,214 = $14,607

[a]The effects of state and federal income taxes are not included here but would tend to have a dampening effect.
[b]Assumes multiplier of 4.
[c]Figure of $14,607 is from the US Army Construction Engineering Research Laboratory's Economic Impact Forecast System, maintained and operated through the Department of Urban and Regional Planning at the University of Illinois.
[d]For rounds other than the first, the proportion is 75%.

Concluding Remarks

The decision to go ahead with the closure of Chanute AFB and 85 other military installations was made on 18 April 1989. While legislators from Illinois have contended that the report urging the base closures was flawed, their cries have been lost in the sea of other lawmakers whose districts were unaffected and who saw the budget deficit as a more immediate concern. In any case, affected communities must take action quickly so that the transition from military dependence to economic independence can be a smooth one.

During Rantoul's more than 70 year dependence on military expenditure, its growth has been closely linked with that of Chanute. Until the first threats of closure were made over a decade ago, little growth outside of the service sector was in evidence in Rantoul. Now, it has an expanding industrial base and has begun to exploit the advantages of its location. Marketing Chanute as an asset will be the key to continued growth and successful transition in the village. As a direct result of the closure, the community will be forced to take its future into its own hands. It is plausible to believe, that given time, appropriate planning and effort, Rantoul faces a future much brighter and more prosperous than its past.

IVAN BULL and FREDERICK WINTER

Community Differences in Business Births and Growth

In April 1987, *Inc.* magazine ranked 154 metropolitan areas by growth criteria that aggregated growth in jobs, business birthrates, and the percentage of fast-growing companies into a single composite score. Austin, Orlando, Phoenix, and Dallas-Fort Worth headed the list. Last place went to Duluth, Minnesota-Wisconsin, preceded by Peoria, Illinois, then Huntington-Ashland in West Virginia-Kentucky-Ohio and Davenport-Rock Island-Moline in Illinois-Iowa. Why does one community prosper while another stagnates? What community attributes account for the differences? If the differences can be identified, can a community consciously change itself? If the differences cannot be satisfactorily identified, can a more specific model of business growth be developed? These and similar questions are addressed in this article.

A central theory of entrepreneurship has not yet been developed. A number of writers have offered theoretical insights to help explain and understand different areas of entrepreneurship, and some have made empirical studies to attempt to relate observable factors to some measure of entrepreneurship. One paper posits that the number of new businesses is a function of the number of entrepreneurs and the perceived level of opportunity.

Another relates the probability of entrepreneurship to attributes of the individual such as sex, race, age, and indications of prior success, plus community attributes. The relevant community attributes include stability or instability of the economy, uncertainty in the form of unpredictable events that accompany instability, barriers to entrepreneurship in the regional economy, lack of sufficient diversification, and gaps in the supply of various resources. Also cited was the appropriate climate and support for innovation in the community, culture, and government policy in the forms of taxes, regulation, and economic management.

A third writer holds that the entrepreneurial climate is shaped by three major influences—culture, information, and opportunity. A high level of entrepreneurship is produced when society's system of cultural rewards satisfy entrepreneurial motivations such as economic return, independence, prestige, and opportunity to follow interests.

Somewhat similarly, another believes that how an entrepreneur acts at a given time and place depends upon the rules of the game, that is, the reward structure that happens to prevail. Entrepreneurs are believed to be flexible and to do whatever it takes to achieve position, power, and wealth.

Others offer an entirely different theoretical and macro explanation for new business starts. They argue that the creation of new ventures is fairly regular and predictable, that new firms are primarily stimulated along industry lines because of new technology, new markets, and changes in government regulation.

Empirical researchers have studied a wide range of variables that they believe have some causal relationship to entrepreneurship. It is, however, sometimes difficult to separate causes from effects.

Findings have provided evidence that:

- A nonsupportive developmental climate exhibited by the power elite of a community correlated with a low number of new incorporated businesses.
- A high percentage of entrepreneurs in successful growth firms had lived in their communities for a long period, and did not want to move.
- The location of a group of companies was influenced in a direct way by the relationship between the founder and/or CEO and a local college or university.
- University professors were directly or indirectly responsible for the creation of several firms.
- Such demographic characteristics as population mobility, urbanization, tax advantage, education, unemployment, being foreign born, and bureaucratic tradition accounted for a high percent of the variance in start-up rates among different states.
- Entrepreneurs in the software industry started a business to accomplish some significant task, not to accumulate wealth.

This Study

First, we provide an analysis of some variables that we believe relate to community entrepreneurship. Next, we propose a new model for the location of a start-up business that is based on some of the shortcomings of the first analysis. We believe that the new model will be helpful for policy development by communities. We also hope it will encourage additional research.

In the analysis of variables, we attempted to relate two measures of entrepreneurship taken from the *Inc.* April 1987 article (the composite score and the new business birthrate) to variables that were selected from other sources. Those other variables included demographic characteristics of the population, community attributes taken from the Rand McNally *Places Rated Almanac*, 1985, the responsiveness of the community to new businesses, community attitudes toward business and entrepreneurship, the infrastructure of the community, and the proximity to both four-year colleges and leading research institutions.

One should interpret the statistical findings cautiously. As in the case of previous studies, the presence of significant correlation does not mean causation. In fact, entrepreneurship may cause the cited effects, rather than vice versa.

Analysis of Variables Related to Community Entrepreneurship

The following factors were positively correlated to both the *Inc.* composite score and the business birthrate, for example, the higher the occurrence of the factor, the higher the measures of entrepreneurship:

- Percent of population that had moved from another state
- Percent Hispanic
- Percent with 16 years or more education
- Low unemployment (high employment)
- Number of four-year colleges within 20 miles
- Incidence of crime
- Quick mail response to letter of inquiry about locating a new business
- Favorable attitude of business development directors about city and state economic climate

A high percentage of white population was negatively correlated with both measures of entrepreneurship, that is, the higher the percentage of the population that was white, the lower the composite score and the business birthrate.

Three factors were correlated with the composite *Inc.* score, but not the business birth rate. The percent of business-related newspaper articles was positively correlated (growing businesses are newsworthy). Affordable housing was negatively correlated (demand probably causes price increases in growing communities); the percent spent by local government on highways (in lieu of other items) had a negative relationship.

Several variables were correlated with the business birth rate, but not to the composite growth score. A quick telephone response to an inquiry about locating a new business and an aggressive marketing attitude, both from business development directors, were positively related to the business birth rate. The supply of cultural facilities was also favorably related to the business birth rate.

The variables with a negative relationship to the business birth rate but not to the composite score included percent of population 65 years and older; percent with 12 years or more education (as opposed to 16 years); health care facilities; climate, terrain, and recreational opportunities; and the amount of advertising by the business development director.

Thus, it seems that the apparent desirability of a city is *not* an inducement for entrepreneurial activity—further evidence that entrepreneurs come from within, not from outside.

Overall Conclusions from Statistical Findings

Demographic characteristics, relatively unchangeable in the short run, account for a high percentage of the variance in the composite *Inc.* score and the business birthrate. Correlations with the factors listed in the *Places Rated Almanac* provide evidence that business births (which would include relocations) occur in locations that do not rate as the most attractive. There is also evidence that community culture and the attitudes of business development people positively influence business development. We conclude that a community cannot expect immediate results from any policy or practice, but that a nonretirement community can influence, over an extended period of time, the extent of entrepreneurship exhibited by its residents.

These conclusions generally support previous findings. And, like previous studies, they offer little help to a community that would like to change the level or pattern of its business growth. We believe that one facet of growth, business start-ups, deserves special attention. We therefore offer the following model upon which a community might base actions to encourage business births.

Model for Location of a Start-up Business

The model (see the chart) begins with generation of an idea, and then develops into a location decision.

The driving force behind an idea can originate in three different ways, or from some combination of the three. Some entrepreneurs start with the desire to achieve personal economic benefit, some with a problem needing a solution, and some with a technology that may or may not have commercial applicability (a solution looking for a problem).

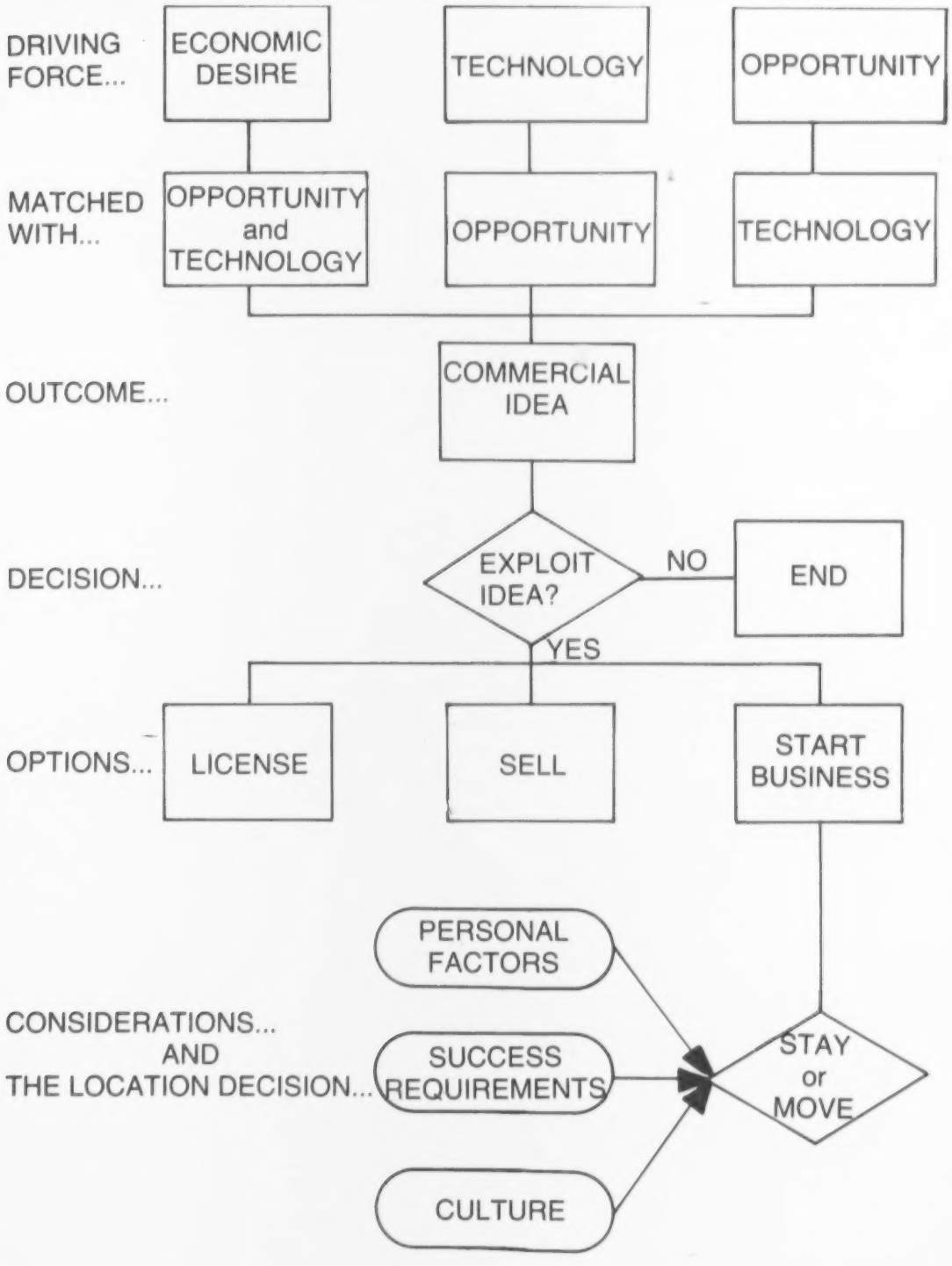
Technology (know-how) and opportunity (problem) need to be matched in order for an exploitable idea to emerge: Neither a solution without a related problem, nor a problem without a solution results in a commercially exploitable idea.

An idea can be exploited in at least three different ways, that is, by licensing, selling, or using. If the entrepreneur chooses to use the idea by starting a business, the business location becomes relevant. He must decide whether to stay or to move.

Personal factors seem likely to be considered first. Some significant barriers must be overcome before the entrepreneur even considers moving. It would seem likely that many entrepreneurs never seriously consider moving, an exploitable advantage for a community that wishes to encourage start-ups.

If the entrepreneur considers moving, his location decision is likely to be influenced by the availability of the requirements that are critical to the success of his business and by the culture of alternative locations that he considers.

Requirements for success may include the availability of physical resources like a pool of adequately qualified potential employees, efficient access to a market, the ability to meet existing competition, a cost-effective production environment, availability of capital, a network of advisers, nearby technology, and similar factors. Obviously requirements differ for different kinds of businesses. Communities will differ in the specific attributes that they can offer to fulfill business requirements.


DRIVING FORCE...
ECONOMIC DESIRE
TECHNOLOGY
OPPORTUNITY
MATCHED WITH...
OPPORTUNITY and TECHNOLOGY
OPPORTUNITY
TECHNOLOGY
OUTCOME...
COMMERCIAL IDEA
DECISION...
EXPLOIT IDEA?
NO
END
YES
OPTIONS...
LICENSE
SELL
START BUSINESS
CONSIDERATIONS... AND THE LOCATION DECISION...
PERSONAL FACTORS
SUCCESS REQUIREMENTS
CULTURE
STAY or MOVE

Community culture, defined as the commitment of the community to some common objectives and common values, is also hypothesized to be a significant variable in the location decision. Culture is likely to be judged by the entrepreneur from the indicators that are readily available. These indicators may include the helpfulness and attitude of business development people. They may also include the presence and visibility of role model entrepreneurs, the extent and tone of coverage of local businesses by the news media, and the perceived willingness of the community to respond to the needs of local businesses. Not every community will want each start-up. Each community will tend to give different signals about its culture. The entrepreneur will try to read these signals so that he will locate in a culture where he will feel comfortable and assured that the community will help, not hinder, his chances for success.

Community Choices

Communities that want to increase the level of entrepreneurship should obviously allocate effort and resources towards the controllable factors. Factors relating to infrastructure are the result of decisions by community leaders and are, therefore, considered to be controllable. The behavior of key people in the development process such as newspaper executives and business development people is changeable and can affect business growth. Cultural factors change slowly, not so easily as the behavior of key people, but culture can eventually change to encourage entrepreneurship. Other characteristics can possibly be changed over a long period of time.

The good news is that some of the nonchangeable variables like climate and terrain do not seem to dominate in the decision where to locate a start-up business. Lacking contrary evidence, we assume that entrepreneurial characteristics are randomly distributed among the new-born. If that assumption is valid, the community that is willing to take a long-term approach to encourage growth should build a culture that nurtures and rewards its resident, but possibly unidentified, would-be entrepreneurs.

Ivan Bull is Director of the Office of Business Innovation and Entrepreneurship, Professor of Accountancy and Finance. Frederick Winter is the Head and Professor of the Department of Business Administration. An expanded version of this article has been submitted for publication in the Journal of Business Venturing.

Bureau Publishes New Statistical Abstract

The Bureau of Business and Economic Research has published a new edition of its statistical abstract for Illinois. The *1989 Illinois Statistical Abstract* provides 600 pages of economic statistics, arranged by county, on such topics as personal income and nonfarm earnings; farm income; transfer payments; employment by industry, by labor force statistics, and by weekly earnings and weekly hours; gross state product; census of manufactures; census of services; census of population and housing; building permits; consumer price indexes and inflation rates; general revenue fund tax receipts; and estimated retail sales.

The abstract has been published in paperback form and, for users with a heavy demand for analysis, on 3.5- or 5.25-inch diskette. Prices are $27.50 for the paperback or $40.00 for the disk version. Both are available from the Bureau of Economic and Business Research, 428 Commerce West, 1206 South Sixth Street, Champaign, Illinois 61820.

Illinois Business Indexes

The outlook for the Illinois economy is indeterminate. The three-month moving average of the BEBR's leading indicator series fell below the six-month moving average in March after three months of exceeding it. The movement can be explained by changes in the component indexes from which the composite index is constructed. The housing index (Chart 4) declined sharply relative to its unusually strong performance in December and February. Such variability causes the three-month moving average and the six-month moving average to cross even though housing over the past six months has been very strong. The movements in the housing index may reflect a variation in the seasonal pattern of housing starts rather than a change in the overall trend. The index of vendor performance has declined below its historical average in the past three months depressing the composite index. The employment picture looks positive. Chart 2 shows Illinois maintaining its recent gains relative to the national unemployment rate. Chart 5 illustrates the neutral impact of help wanted indexes on this month's composite index. The Consumer Price Index does not provide evidence of an increasing rate of inflation. Although the Illinois leading indicator model fails to make a formal prediction, encouraging signals emerge from an informal analysis of the forces driving the model.

ILLINOIS BUSINESS INDEXES

	Percent Change Mar. 1988-Mar. 1989	Mar. 1989	Feb. 1989	Jan. 1989	Dec. 1988	Nov. 1988	Mar. 1988	Feb. 1988
Leading Indicator (MA3)[a]	−0.55	12.44	19.57	20.09	18.65	13.38	12.99	13.57
Leading Indicator (MA6)[a]	3.24	15.48	16.32	16.58	15.54	13.82	12.24	11.48
Employment-manufacturing (in thousands)[b]	1.04	978	977	976	978	950	968	961.5
Average weekly hours-manufacturing[b]	−0.48	42	42	41	42	42	41.8	42
Weekly earnings-manufacturing[b]	0.15	$460.93	$460.24	$453.74	$461.20	$459.51	$460.22	$460.22
Help wanted advertising-Chicago (1967 = 100)[c]	−11.21	103	111	113	105	105	116	116
Help wanted advertising-St. Louis (1967 = 100)[c]	2.99	69	71	77	74	67	67	69
Retail sales (in millions)[d]	4.66	$6,463	$5,312	$5,575	$7,730	$6,309	$6,175	$5,234
Coal production (in thousands of tons)[b]	N/A	N/A	N/A	4,837	4,798	4,839	5,200	4,873
Petroleum products (in thousands of barrels)[b]	N/A	N/A	N/A	1,800	1,900	1,930	2,000	1,990
Vendor performance[e]	N/A	51%	53%	54%	53%	52%	57%	61%
Building permits (in thousands)								
Residential housing units	1.31	3.250	2.772	1.604	5.630	3.300	3.208	1.388
Value of residential housing	−9.95	$307,177	$206,798	$164,107	$408,172	$290,926	$341,112	$161,368
Value of nonresidential construction								
Industrial buildings	41.64	$19,000	$23,058	$39,663	$94,037	$38,612	$13,414	$17,734
Office, banks, and professional buildings	−42.86	$52,442	$16,934	$27,802	$136,165	$81,475	$91,781	$124,263
Stores and other mercantile buildings	3.34	$39,083	$20,814	$26,998	$77,815	$37,752	$37,818	$28,496
Other	−17.53	$4,126	$3,333	$3,811	$3,610	$5,248	$5,003	$1,565
Consumer price index (1982–84 = 100)								
North Central US	4.81	119.8	119.3	118.7	118.2	118.1	114.3	113.7
North Central/population more than 1,200,000	5.21	121.1	120.4	119.8	119.2	119.1	115.1	114.7
North Central/population 360,000 to 1,200,000	4.38	119.2	118.6	118.3	118.2	118.0	114.2	113.5
North Central/population 50,000 to 360,000	4.62	119.9	119.5	118.8	118.2	118.4	114.6	113.4
North Central/population less than 50,000	3.96	115.5	115.1	114.4	114.0	114.1	111.1	110.5
Chicago	5.22	123.0	122.2	121.5	121.3	121.0	116.9	116.6
St. Louis	4.55	119.4	—	118.4	—	118.3	114.2	—
		1988:III	1988:II	1988:I	1987:IV	1987:III	1987:II	1987:I
Personal income (in millions)[b,f,g]	6.56	$202,735	$200,993	$199,545	$197,917	$190,246	$187,332	$186,227
Per capita personal income[b,f,g]	6.26	$17,421	$17,283	$17,171	$17,043	$16,394	$16,155	$16,071

[a]Represents absolute change (percent change not relevant). [b]Recent month is preliminary figure. [c]The Conference Board, *Help Wanted Advertising*. [d]Latest month projected by BEBR. [e]Percentage of companies receiving slower deliveries. Bureau of Economic Analysis. [f]Seasonally adjusted at annual rates. [g]Percent change between 1987:III and 1988:III.

Chart 1. Composite Leading Indicators
(average percent change in base indexes)

Chart 2. Unemployment Rates: Illinois vs. US *(seasonally adjusted)*

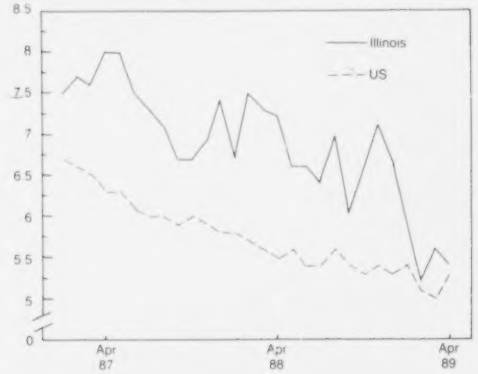


Chart 3. Vendor Performance vs. Composite Indicator *(seasonally adjusted, January 1972 = 100)*

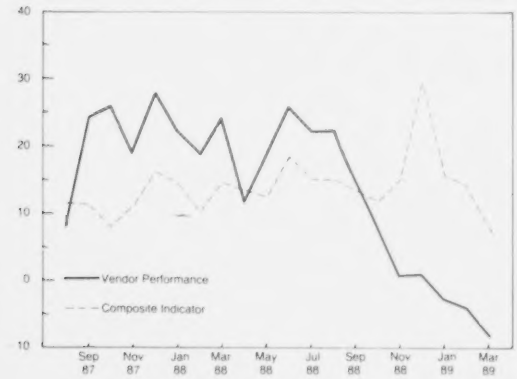


Chart 4. Housing Index vs. Composite Indicator *(seasonally adjusted, January 1972 = 100)*

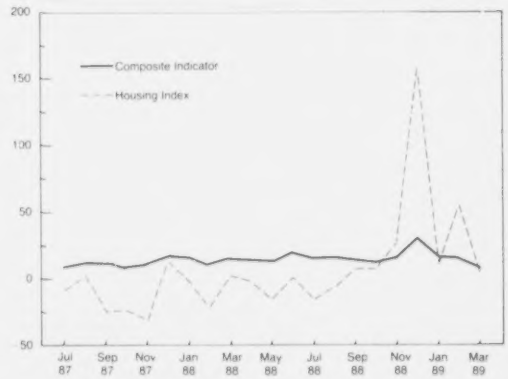
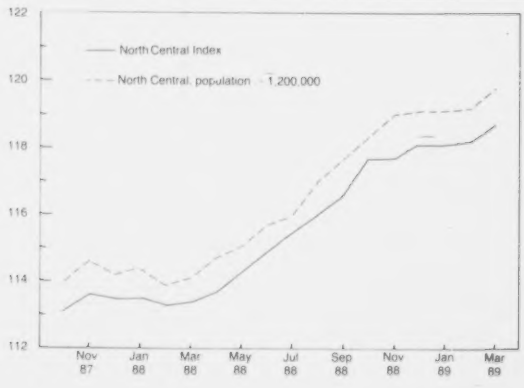


Chart 5. Help Wanted Indexes vs. Composite Indicator *(seasonally adjusted, January 1972 = 100)*

Chart 6. Selected CPI, Regional vs. Metropolitan *(1982–1984 = 100)*



Illinois Business Review

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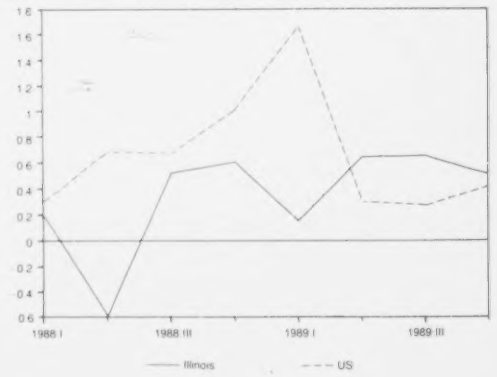
Illinois Economic Outlook

Personal income in Illinois is expected to grow at a modest pace during 1989. In the fourth quarter of 1988, total personal income was nearly $208 billion but is expected to increase to slightly more than $222 billion by the fourth quarter of 1989. The largest portion of the growth in income is attributable to a $4 billion increase in income derived from services. If the expected level of inflation over the next year is considered, then the increase in the level of real income is approximately $4 billion.

The chart illustrates the quarterly percentage changes in income for the state and the national economy. In contrast to experience in the nation as a whole, real income in Illinois fell in the second quarter of 1988. Beyond that, growth in income in the state during 1988 was slower than in the United States. In 1989, however, it is expected that Illinois personal income will grow at a rate that exceeds that of the nation.

Real Personal Income *(percentage change from previous quarter)*



Illinois Seasonally Adjusted Personal Income *(nominal, at annual rates)*

	History				Forecast			
	1988:I	1988:II	1988:III	1988:IV	1989:I	1989:II	1989:III	1989:IV
Total personal income (in millions)	$199,986	$201,058	$204,345	$207,832	$210,910	$214,717	$218,576	$222,329
Private nonfarm	126,854	128,372	132,168	134,563	136,268	138,379	140,524	142,613
Mining	1,010	975	1,023	1,013	1,027	1,028	1,027	1,026
Construction	8,826	9,057	8,920	9,096	9,200	9,291	9,386	9,479
Manufacturing	31,661	31,364	32,773	32,669	33,152	33,407	33,636	33,792
Durable manufacturing	19,620	19,199	20,032	19,994	20,247	20,358	20,460	20,496
Nondurable manufacturing	12,041	12,165	12,740	12,674	12,905	13,050	13,176	13,296
Utilities and transportation	11,175	11,346	11,644	11,712	11,899	12,080	12,255	12,420
Wholesale trade	11,593	12,040	12,135	12,472	12,639	12,811	12,985	13,156
Retail trade	13,290	13,644	13,808	13,971	14,110	14,274	14,448	14,625
Finance, insurance, and real estate	13,222	12,778	12,934	13,275	13,560	13,859	14,165	14,476
Services	35,566	36,638	38,412	39,822	40,681	41,629	42,622	43,639

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College of Commerce and Business Administration
University of Illinois at Urbana-Champaign

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Illinois and the National Economy /

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WILLIAM R. BRYAN

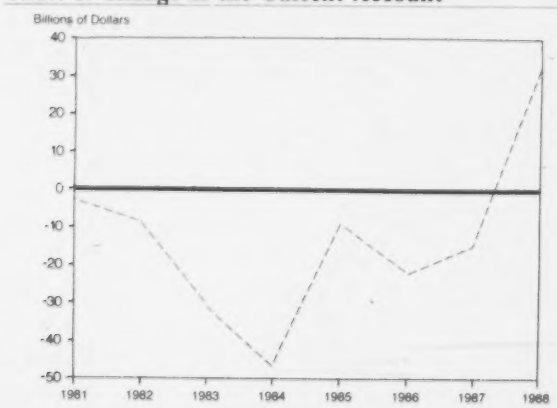
A View of the Balance of Payments

A nation's balance-of-payments situation is nearly always a matter of concern to someone for some reason.

We worry about an expansion in our exports and a reduction in imports because such developments can foster inflationary pressures; we worry that a reduction in exports and an expansion in imports may contribute to economic weakness. We worry about an expansion in US lending and investing abroad because such developments divert resources away from productive domestic uses; moreover, foreign lending can lay the basis for future debt problems in the event that, at length, foreigners will be unable to meet their obligations. We worry about an expansion in foreign lending and investment in the US because it can lead to the spread of unwanted foreign ownership of domestic enterprises. We worry about devaluation of the dollar because it may hurt importers; finally, we worry about revaluation because it hurts exporters.

Defined in terms of exchange rate movements, there have been three distinct time periods during the 1980s. From 1980 through late 1984 the dollar price of foreign currencies declined. In fact, during the 1984 presidential election campaign, there was great concern over the strong dollar. The strength of the dollar was blamed on high domestic interest rates. In contrast, from early 1985 through late 1987 foreign currency prices rose. By the time of the 1988 presidential election campaign, there was concern over the weak dollar and about exporting jobs, not goods. Currency prices stabilized in 1988 and have moved sharply higher during 1989. These three different periods also are characterized by reasonably distinctive movements in the nation's trade position. Although the current account has been in deficit since 1975, there have been marked changes in the size of the deficit. The deficit grew rapidly from 1980 to 1984, adding $88.1 billion over the four-year period (see Chart 1). During the next three years, the growth in the deficit slowed, with annual increases falling by about one-third. Since 1987 the current account has moved toward surplus.

Chart 1. Change in the Current Account



Balance-of-Payments Accounting

To understand the current account fully, it is helpful to see where it fits within the overall balance of payments. The first thing to understand about the balance of payments is that it always balances. Table 1 is a simplified balance of payments statement. In this table the current account consists only of exports and imports. According to this hypothetical table, there is a 50-unit excess of imports over exports. The current account deficit is funded by a net increase in US liabilities to foreigners. Of course, that net increase could have emerged from a variety of asset/liability configurations. For example, an import may be funded by an increase in accounts payable (that is, foreign holdings of accounts receivable); it may be funded by an increase in foreign holdings of deposits in US banks; it may be funded by a reduction in US holdings of deposits in foreign banks. Each funding technique maintains balance in the payments account.

It is common to regard an excess of imports over exports as negative, in the sense that the condition implies greater *uses* of foreign currencies than *sources*. Similarly, it is common to regard the excess of growth in US liabilities to foreigners over growth in US foreign-currency-denominated assets as positive, in the sense that the condition implies greater *sources* of foreign currencies than *uses*.

Table 1. Simplified Balance of Payments Statement

	Foreign Sources	*Currency Uses*
Current Account		
Exports	200	
Imports		250
Net Change in Capital Account		
US Assets		
Deposits in Foreign Banks		+ 100
Loans to Foreigners		+ 100
Holdings of Foreign Securities		+ 100
Accounts Receivable		+ 50
US Liabilities		
Foreign Deposits in US Banks	+ 100	
Borrowing from Foreigners	+ 100	
Foreign Holdings of US Securities	+ 100	
Accounts Payable	+ 100	
TOTALS	+ 600	+ 600

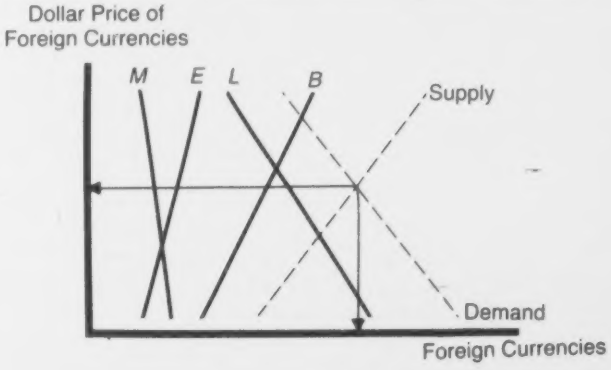
Exchange Rate Determination

As is the case with other prices, the price of foreign currencies is determined by supply and demand. The supply of foreign exchange is generated by exports and by increases in US liabilities to foreigners. Holding constant the multitude of factors affecting international trade and investment, it is believed that there are increases in the quantity of foreign currencies supplied as a consequence of an increase in the dollar price of foreign currencies. To the foreigner, an increase in the dollar price of currency implies a reduction in the price of dollars. Suppose that the cost of a French franc rises from 13 cents to 17 cents. From the perspective of the French, the franc price of a dollar will have declined from 7.69 to 5.88. Hence, the French will observe that there have been declines in the cost of American goods. It is for this reason that, other considerations unchanged, the US will observe that the quantity of exports increases as a result of increases in the dollar price of foreign exchange (see schedule denoted by *E* in Chart 2). By similar reasoning, it is believed that there are declines in the quantity of imports as a result of increases in the dollar price of foreign exchange (see schedule denoted by *M* in Chart 2).

In explaining the impact of alternative exchange rates on net changes in the capital account, it is necessary to invoke other considerations. There is no reason to suppose that any given *level* of exchange rates, if it were to remain unchanged, would have an impact on an investor's willingness to place funds in a foreign country. But major problems emerge with shifts in exchange rates. For example, suppose an American invested $1,000 in France when the price of francs was 17 cents, then shifted back into dollars after the dollar price of francs had fallen to 13 cents. By virtue of the exchange rate movement that investor would have experienced nearly a 24 percent decline in his/her principal and in whatever earnings had been associated with the investment. Holding other factors unchanged, the higher a country's exchange rate, the more plausible is the belief that the rate is likely to fall. Such a state of affairs serves to inhibit investment in that country. Such considerations lead us to show declines in the quantity of US lending and investing abroad as a consequence of increases in the dollar price of foreign exchange (see the schedule denoted by *L* in Chart 2). By similar reasoning, increases in the dollar price of foreign currencies result in increases in foreign lending and investing in the United States (see the schedule denoted by *B* in Chart 2).

The supply schedule of foreign exchange, shown as a dotted line in Chart 2, is the sum of exports (schedule *E*) and net foreign investment (schedule *B*). The demand-for-foreign-exchange schedule, also shown as a dotted line in Chart 2, is the sum of imports (schedule *M*) and net US investment abroad (schedule *L*). Note that the market-clearing exchange rate results in a current account surplus but a net change in the capital account leading to a deficit in foreign currencies.

Chart 2. Supply and Demand for Foreign Currencies

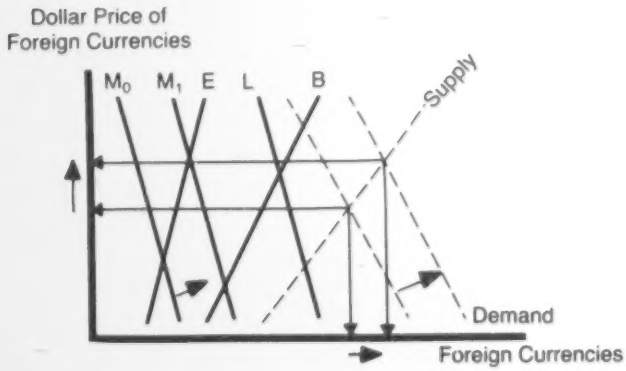


Up to this point, discussion has been limited to a description of the *shape* of the schedules. In so doing we consider movement along a supply or demand schedule as a consequence of changes in exchange rates only. I have taken care to use phrases such as "other things equal" or "holding other considerations constant." By such phrases, it has been my intention to hold constant all factors affecting supply and demand. I now want to change the focus of analysis, turning attention to the factors that *shift* supply and demand schedules. Once this is done, we can regard changes in exchange rates as a consequence of shifts in supply and demand.

A chief factor affecting US demand for imports and foreign demand for US exports falls under the general heading of productivity. A country's price performance or changes in the quality of goods relate in part to productivity developments. If French prices of goods and services entering into international trade rise less rapidly than comparable goods and services in the United States, there will be a tendency for an increase in US demand for French goods and services, whatever the exchange rate. Similarly, because of quality considerations or for ill-defined reasons, Americans may become enamored with Scottish cashmere, Iranian caviar, French cheese, or whatever. Such an intensification of interest could account for an increase in US demand for imports. Whatever the underlying explanation, an increase in demand for imports is denoted by a shift in the import schedule from *M*0 to *M*1 (see Chart 3).

As a result of an increase in US demand for imports, there would be a rise in the dollar price of foreign exchange. The movement into deficit on current account must be accommodated by a net foreign accumulation of dollar-denominated assets. That net accumulation is achieved by a movement up the schedules depicting foreign lending and investing in the U.S. and net US investing abroad (see Chart 3).

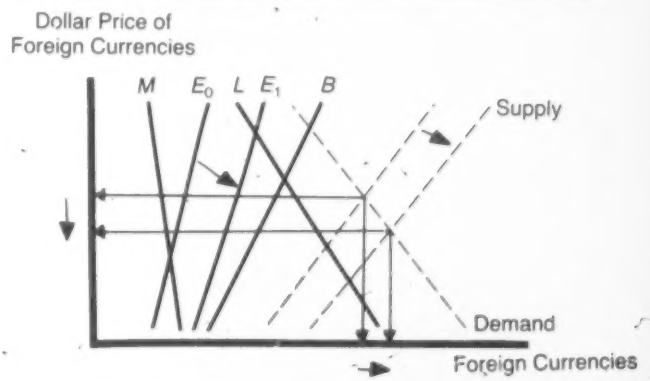
Chart 3. Increase in Imports



In the event of such a change in demand, the following combination of developments would be expected. (1) there would be an increase in the dollar price of foreign exchange. (2) the current account would move toward deficit. And (3) foreigners would increase their net holdings of dollar-denominated assets. These developments are summarized in Table 2. (An identical combination of developments would accompany a leftward shift in the export schedule; hence, that shift is not shown.)

One might imagine that there could be an increase in foreign demand for US goods and services. Such a change might reflect differential inflation rates, changes in tastes, and so forth. As a consequence of the change in foreign demand, the export schedule would shift from *E*0 to *E*1 (see Chart 4). Other things held unchanged, there would be a decline in the dollar price of foreign exchange. Because the current account has moved into surplus, the capital account must move to an accommodating use of foreign exchange. That movement is brought about by a movement down the schedules depicting US lending and investing abroad and foreign lending and investing in the United States (see the *L* and *B* schedules in Chart 4).

Chart 4. Increase in Exports



Developments accompanying the increase in foreign current account demand include: (1) a decline in the dollar price of foreign exchange; (2) a movement of the current account toward surplus; and (3) an increase in US holdings of foreign-currency-denominated assets. These developments are summarized in Table 2. (An identical set of developments would accompany a leftward shift in the *M* schedule; hence, that shift is not shown.)

Suppose that foreigners find investment in dollar-denominated assets to be increasingly attractive. It is quite clear that the US produces some of the world's finest debt. Foreigners are attracted by political stability in the US; they are attracted by the easy access to US financial markets; they are attracted by the massive strength of the US economy. Whatever the specific motivation, an increase in foreign demand for US assets would result in a shift in the foreign lending schedule from *B*0 to *B*1 (see Chart 5). Other things equal, the increase in supply of foreign currency would reduce the dollar price of foreign currency.

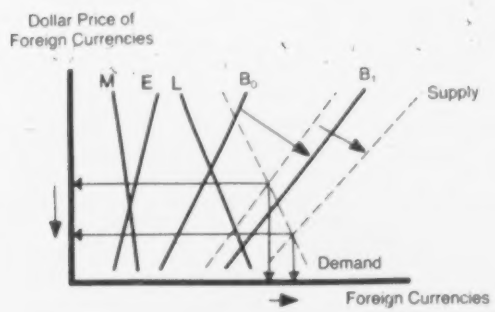
Table 2. Exchange Rates, International Trade and Capital Movements

Source of Change	*Dollar Price of Foreign Currencies*	*Current Account*[a]	*Change in Capital Account*[a]
Increase in US Demand for Imports	+	−	+
Increase in Foreign Demand for US Exports	−	+	−
Increase in Foreign Demand for Dollar-Denominated Assets	−	−	+
Increase in US Demand for Foreign-Currency-Denominated Assets	+	+	−

[a]Plus sign indicates that change involves an increase in (or source of) foreign currency holdings. Minus sign indicates that change involves a reduction in (or use of) foreign currency holdings.

The efforts of foreigners to shift resources to the US is accomplished by the movement of the US current account into deficit. That movement is accomplished by an increase in imports demanded and a reduction in exports demanded. These changed quantities involve movement along existing schedules (see *M* and *E* schedules in Chart 5). To summarize, the increase in foreign demand for dollar-denominated assets resulted in: (1) a decline in the dollar price of foreign exchange; (2) a movement of the current account into deficit; and (3) an increase in foreign holdings of dollar-denominated assets (see Table 2). (An identical set of developments would result from a leftward shift in the *L* schedule; hence, that shift is not shown.)

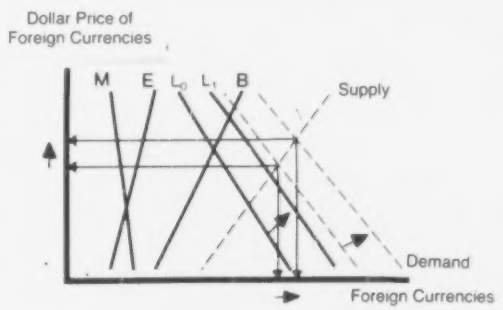
Chart 5. Increase in Foreign Lending and Investing in the United States



Finally, consider the consequences of an increase in US demand for foreign currency-denominated assets—that is, an increase in US lending and investment abroad. Because of the increase in demand, the schedule depicting US lending and investing abroad, a use of or demand for foreign currencies, shifts from *L*0 to *L*1 (see Chart 6). The current account counterpart of an effort to shift resources abroad is a movement toward a greater excess of exports over imports. This current account development results from the change in exchange rates. An increase in the dollar price of foreign exchange serves to reduce imports and increase exports; these changes consist of movements along unchanged schedules (see Chart 6).

To summarize, the consequences of an increase in US demand for foreign-currency-denominated assets (lending and investing abroad) are: (1) an increase in the dollar price of foreign currencies; (2) a movement of the current account toward surplus; and (3) an increase in US holdings of foreign assets (see Table 2). (An identical set of developments would result from a leftward shift in the *B* schedule; hence, that shift is not shown.)

Chart 6. Increase in US Lending and Investing Abroad



Interpreting the 1980s

By virtually any measure, the dollar was very weak as the decade of the 1980s opened. The US economy had stumbled through the stagflation of the late 1970s. The nation's political impotence had been highlighted by the occupation of the US embassy and the taking of hostages in Iran. The US was further frustrated by its inability to achieve cooperation in its efforts to mount a meaningful embargo against the Soviets in response to their invasion of Afghanistan.

But the dollar began to strengthen early in the decade, and the upward momentum was maintained for more than four years. The strong dollar was accompanied by sharp movements of the current account toward an enlarged deficit. The combination of developments characterizing the 1980–1984 period is consistent with a net increase in foreign demand for dollar-denominated financial assets. US interest rates rose markedly in 1980 and 1981, providing some basis for the increased foreign demand for US debt early in the decade. Subsequently, the recovery of the US economy, the diminution of US inflation, and the improvements in productivity combined to improve prospects for domestic investment. At the same time, the political stability in the US became increasingly attractive against the backdrop of election results in France, the spread of Muslim fundamentalism, and the Soviet occupation of and adventurism in Afghanistan, among other considerations. The strong demand for US debt drove the price of foreign currencies lower. As a consequence, imports expanded more rapidly than exports.

The dollar began to weaken in late 1984 and early 1985, then foreign currency prices rose steadily through early 1988. The growth in the deficit slowed during this period, but its absolute level reached unprecedented magnitudes. Such a set of developments is consistent with an increase in US demand for imports relative to foreign demand for US exports. In part, the demand shift can be related to the rise in US inflation relative to rates in most foreign countries. Even so, foreign demand for US debt remained strong.

The exchange rate movements over the past year have been striking. On balance the dollar has strengthened markedly. Following world-wide stock market collapses, there appears to have been a shift toward quality. As indicated, the United States produces very high-quality debt. At the same time, exports have grown relative to imports, and the current account has moved toward surplus. Such a set of developments argues that the most powerful ongoing change is an increase in foreign demand for US exports relative to US demand for imports. But the recent exchange rate developments are erratic and of short duration. Additional experience is necessary for a fully reasoned interpretation.

Economic Policy Considerations

The review of the sources of change examined above provides an occasion for several observations. (1) a strengthening dollar (that is, a declining dollar-price of foreign currencies) can result either by virtue of an increase in foreign demand for US exports relative to imports or by an increase in foreign demand for US debts, equities, or fixed investment relative to US lending and investing abroad. (2) as a result, a strengthening dollar can be associated with either a trade surplus or a trade deficit. Similarly, (3) a weakening dollar (that is, a rising dollar price of foreign currencies) can be associated with a trade surplus or a trade deficit. The combination of outcomes depends on the sources of change.

Which of these combinations of outcomes is most desirable? To the politician, the most popular combination consists of a current account surplus, a capital account change involving a build-up of US holdings of foreign-currency-denominated assets, and a strengthening dollar. Certainly, such a combination is what office holders and office seekers seem to be describing in media interviews. (Of course, no one wants the dollar to be *too* strong!)

But from the perspective of this nation's economic well-being, it can be argued that the desirable combination of outcomes includes a current account deficit and a capital account surplus. The benefits from foreign trade consist of goods and services brought into a country; the costs consist of goods and services sent away for the enjoyment of foreigners. Presumably a nation motivated to pursue its own interests would prefer to use the fruits of someone else's labors and to use up the resources of others. In so doing it conserves its own natural resources and can divert its own labor to growth-enhancing activities. Unfortunately, it turns out that nearly all good things involve, or can involve, unwanted side-effects. Thus, for example, the unemployed US automobile worker takes little joy in knowing that Japanese workers had to exert themselves and that added labor is now available to engage in an increasingly productive activity. Indeed, the unemployed worker takes little joy in the introduction of any labor-saving device, whatever the prospects for the nation's long-term gains. And, as it turns out, workers vote.

As indicated, there is a financial counterpart to the current account. In particular, if the United States experiences a large and persistent trade deficit, the rest of the world must accumulate large and persistent net increases in their holdings of dollar-denominated assets—for example, US Treasury securities or common stock of US businesses. To all this a typical reaction is: "But what if foreigners don't want to hold our debt?" Such a question deserves a serious answer.

Limiting ourselves to practical considerations, once dollar-denominated debt or other financial assets get into the hands of foreigners there are only two ways for them to reduce their holdings. They can purchase US goods and services, or they can buy fixed assets in the US, chiefly real estate. As it turns out, the US produces a wide range of reasonably attractive goods and services. In addition, our laws and traditions facilitate foreign ownership of property in the US. Such considerations provide the underlying basis for the attractiveness of US financial assets.

But if a mood were to develop so that foreigners attempted to rid themselves of dollar-denominated debt or equities, their actions would place downward pressure on prices of debt and equity. Unless the Federal Reserve were prepared to permit upward movement of interest rates, the foreign selling pressure would be likely to induce open market purchases. As a consequence, there would be an acceleration in the rate of growth in monetary aggregates. Whether the accelerated growth in aggregates would be timely in the context of domestic cyclical developments is problematic.

The upshot of all this is that ours is not a problem-free world. There is probably no single combination of outcomes that is desirable in all respects. Certainly, there is no combination that is forever sustainable. Even so, it strikes me that the United States must be biased toward a capital account surplus. Our debt is simply too attractive to resist. If this is so, we need to rest easy with persistent trade deficits. Further, we need to develop better methods for mitigating the adverse effects of deficits on displaced American workers and businesses. Let them reap some of the advantages too.

PHILLIP RUSHING

What Are "Effective" Interest Rates?

A currently popular computer buzz word—"wysiwyg"—stands for "what you see is what you get." With interest rates, especially mortgage interest rates, the reverse is frequently true—what you see is not what you get. That is, the contract interest rate differs from the "effective" interest rate.

The difference between the contract rate and the effective rate is due to fees—sometimes called loan origination fees, or points—that must be paid in lump sum at the time a mortgage loan is obtained. The word "point" means one percentage point and is multiplied times the amount borrowed to determine the dollar amount of the fees. Thus, a $100,000 loan with three points would require a $3,000 lump sum payment by the borrower to the lender at the closing. The number of points charged by lending institutions varies with market conditions, but is generally in the neighborhood of zero to five. Any amount greater than zero has the effect of making the true, or "effective," interest rate greater than the contract rate.

Consider the purchaser of a $100,000 home who makes a $20,000 downpayment and is considering an $80,000 loan at 9.75 percent interest with monthly payments for 25 years. If two points are charged by the lender, the borrower must pay $1,600 to the lender at closing. This makes the effective loan to the lender only $78,400, even though the borrower must repay the full $80,000. The monthly payment for such a loan is calculated as follows:

$$\text{Payment} = \frac{i/12(1 + (i/12))^n}{(1 + (i/12))^n - 1} \times \$80{,}000.$$

Where: i = annual contract interest rate; n = term of loan, in months.

Using 0.0975 for i and 300 for n, the above calculation yields a monthly payment of $712.91. To determine the effective interest rate, one must calculate the rate of interest that will make the summation of the monthly payments equal to the effective loan of $78,400. The equation is as follows:

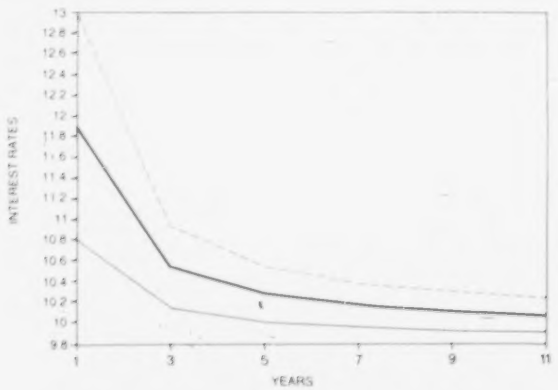
$$\$78{,}400 = \$712.91 \times \frac{(1 + i/12)^n - 1}{i/12(1 + i/12)^n}.$$

Solving the above equation for i yields an effective interest rate of 10.00 percent.

Unfortunately, the analysis is generally not this straightforward. The above calculations incorporate the rather subtle assumption that the mortgage is held for the full 25 years. While this is certainly true in some cases, there are many instances where it is not true. Job transfers, moving up to a larger home (or down to a smaller one), and a host of other socioeconomic events result in mortgages being paid off before the full term has expired. Many lenders report that the average life of a loan is approximately 7 years.[1] That is, after approximately 7 years lending institutions can expect, on average, to receive the balance then outstanding on a mortgage loan. Such early payment has the effect of exaggerating the impact of points and making the effective interest rate even larger. Consequently, lending institutions in relatively transient communities are likely to be more profitable than those in communities with lower rates of mortgage turnover.[2]

The sooner a loan involving points is paid in full, the higher the effective rate will be. Indeed, if a mortgage loan involving points was to be repaid immediately, the effective interest rate would approach infinity. The chart illustrates this concept. It shows effective rates for one, two, and three points. As can be seen, the effective rates approach the contract rate as the length of the holding period increases, but increase significantly above the contract rate as the time period decreases.

Effective Interest Rates
(9¾%; 1, 2, 3 points)



The table provides additional calculations for effective interest rates assuming contract rates varying from 8 percent to 11 percent, points varying from 1 to 3, and holding periods varying from 1 to 25 years. All calculations in the table assume an $80,000 loan with monthly payments over 25 years.

Let us return to the hypothetical example of an $80,000 loan at 9.75 percent interest with two points and monthly payments over 25 years. Assume that the balance of this loan is paid in full after seven years (84 months). The calculation for the balance due on a loan is as follows:

$$\text{Balance Due} = L\left[1 - \frac{(1 + (i/12))^t - 1}{(1 + (i/12))^n - 1}\right]$$

Where: t = the period of time, in months, that the mortgage will be held; L = the original amount of the mortgage. The above calculation, with $t = 84$, $L =$ $80,000, and $i = 0.0975$ yields a balance due of $72,401.67 after 84 payments have been made. The calculation for the effective interest rate is as follows:

$$\$78{,}400 = \$712.91\left[\frac{(1 + i/12)^t - 1}{i/12(1 + i/12)^t}\right] + \frac{\$72{,}401.67}{(1 + i/12)^t}.$$

Solving the equation for i yields an annual effective interest rate of 10.17 percent—a significant increase of more than ⅓ of a percentage point over the contract rate of 9.75 percent. If the loan in this example were to be paid after five years, the effective rate would be 10.28 percent. If it were paid after three years, the effective rate would be 10.54 percent. If the loan were to be paid after one month, the effective annual rate would balloon to 34.44 percent.

A related issue involves choosing between a relatively low interest loan with relatively high points and the reverse—a relatively high interest rate with relatively low points. Such options are frequently made available by lending institutions. Rational decision-making requires the calculation of the effective rate, and the calculation is unique to each investor/borrower since it requires knowledge (or an assumption) about how long the mortgage will be held. In general, the higher the points and the shorter the time period for which the mortgage will be held, the higher the effective rate.

Interest Rates

	8%			9%			10%			11%		
	1pt	*2pts*	*3pts*	*1pt*	*2pts*	*3pts*	*1pt*	*2pts*	*3pts*	*1pt*	*2pts*	*3pts*
1	9.06	10.12	11.20	10.06	11.13	12.22	11.07	12.14	13.23	12.07	13.15	14.25
3	8.39	8.78	9.17	9.39	9.78	10.18	10.39	10.79	11.20	11.40	11.80	12.21
5	8.25	8.51	8.77	9.26	9.52	9.78	10.26	10.53	10.80	11.27	11.54	11.81
7	8.20	8.40	8.60	9.20	9.41	9.61	10.21	10.42	10.63	11.21	11.43	11.65
9	8.17	8.34	8.51	9.17	9.35	9.53	10.18	10.36	10.54	11.18	11.37	11.56
11	8.15	8.30	8.46	9.16	9.31	9.47	10.16	10.32	10.49	11.17	11.34	11.51
13	8.14	8.28	8.42	9.143	9.29	9.44	10.15	10.39	10.45	11.16	11.31	11.47
15	8.13	8.26	8.40	9.14	9.28	9.41	10.14	10.29	10.43	11.147	11.30	11.45
20	8.12	8.24	8.37	9.13	9.253	9.384	10.132	10.266	10.403	11.138	11.280	11.423
25	8.117	8.236	8.36	9.12	9.249	9.376	10.129	10.262	10.396	11.136	11.275	11.417

Notes

[1]The *Federal Reserve Bulletin* reports statistics assuming an average mortgage life of 10 years. Yields on Government National Mortgage Association mortgage backed pass-through securities are calculated assuming repayment in 12 years.

[2]Lending institutions are required by regulation Z (Truth in Lending) to report the "effective" rate to borrowers. They do so, however, by assuming the loan will be held for the full term.

JAMES R. BRUEHLER

Illinois and the National Economy

The Bureau of Economic and Business Research at the University of Illinois, like similar institutions in other states, is interested in forecasting and analyzing the state economy. The economy of a state, however, cannot be understood apart from the larger economic community. A common money supply, labor and capital mobility, and unfettered interstate trade generally cause the economic fortunes of the states to rise and fall together. Prosperity cannot be enclosed within a state, nor can economic problems be halted at the border.[1] Forecasting and analysis of a state's economy, therefore, must be predicated upon beliefs about the national economy. In order to customize an analysis for the state, it is important to develop an understanding of the distinctive qualities that cause the state economy to behave differently from the national economy. A state's population demographics, educational trends, land use patterns, and industrial composition can help to explain the divergence of an area's economy from the national economy. This article investigates the divergence of state economic growth from national trends.

Chart 1 depicts gross state product (GSP) in constant 1982 dollars for Illinois and for the nation. GSP is the gross market value of the goods and services attributable to labor and property located in a state. It is the state counterpart of the nation's gross domestic product (GDP).[2] These estimates are provided by the Bureau of Economic Analysis (BEA) and are the most comprehensive measures of production available by state.

Chart 1. Real Total GSP *(millions of 1982 dollars)*

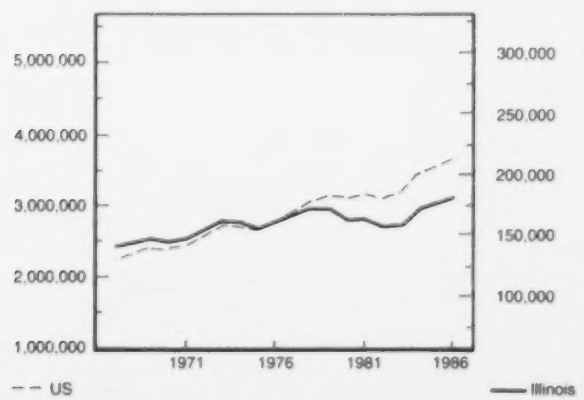
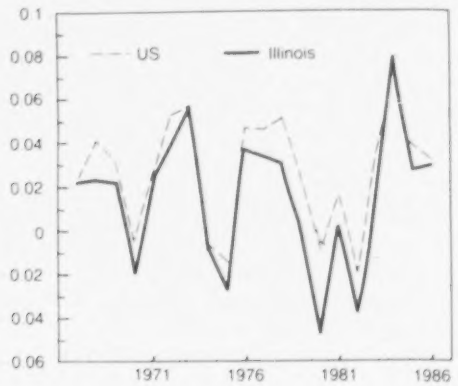


Chart 2 plots the percentage rate of growth of total GSP for Illinois and the United States over time. The similarity of the curves illustrates the extent to which the real growth of the Illinois economy mirrors the real growth of the national economy. Over the period shown, a change in the rate of growth at the national level is virtually always echoed by a movement at the state level in the same direction. This conformance is evidence of the dominance of national economic trends over the state economy.

Chart 2. Real Total GSP *(percentage rate of growth)*



A striking difference can also be seen. Although the Illinois economy and the national economy expand and contract together, the magnitude of the movements is not identical. Over the 20 years shown, the Illinois economy experienced real growth of 32 percent and nominal growth of 318 percent compared to 69 percent and 453 percent for the nation. Some of this divergence can be explained by the sectoral composition of the Illinois economy and the Great Lakes region.[3]

Table 1, where GSP is segmented into 10 sectors for the United States, Illinois, and the Great Lakes region, shows that one-third of all output generated in Illinois and 39 percent of all output generated in the Great Lakes region in 1966 was in the manufacturing sector, and that this sector experienced much slower growth over the ensuing 20 years than the economy did in general. Since manufacturing was a larger part of the state and regional economy than of the national economy, the slow growth of the sector would likely have a larger relative impact on the state and region than on the national economy.

Manufacturing in Illinois and the Great Lakes region grew at an even slower pace than manufacturing nationally. Can this be explained by differences in the composition of the manufacturing sector in Illinois, the Great Lakes region, and the nation?

Table 2 presents the composition of manufacturing at the most disaggregated level available in the BEA estimates. It shows that primary metal industries, fabricated metal products, machinery (except electrical), and motor vehicles and equipment were a larger proportion of the state and regional economies than of the national economy. These industries experienced even slower growth than manufacturing in general. Since Illinois and the Great Lakes region have a relatively larger share of these industries, their economies are likely to be more affected by the depressed growth than the nation at large.

Table 1. Gross State Product by Sector

	% Nominal Growth '66–'86			*Sector % of Total, 1966*		
Industry	*US*	*Illinois*	*G'Lakes*	*US*	*Illinois*	*G'Lakes*
Total Gross State Product	453%	318%	311%	100.0%	100.0%	100.0%
Agriculture, Forestry, and Fisheries	267%	157%	192%	3.3%	3.1%	2.8%
Mining	551%	220%	331%	1.9%	1.0%	0.6%
Construction	422%	263%	219%	5.0%	4.7%	4.7%
Manufacturing	279%	157%	180%	28.7%	32.8%	39.3%
Transportation, Communication, and Public Utilities	481%	395%	369%	8.9%	9.1%	8.1%
Wholesale trade	476%	343%	360%	6.7%	8.0%	6.2%
Retail trade	459%	330%	339%	9.6%	9.1%	8.9%
Finance, Insurance, and Real Estate	550%	419%	415%	14.1%	14.1%	13.0%
Services	749%	606%	609%	10.9%	10.4%	8.9%
Government	499%	411%	424%	10.8%	7.7%	7.6%

Table 2. Manufacturing Subsectors

Industry	% Nominal Growth '66–'86			Subsector % of Mgf., 1966		
	US	Illinois	G'Lakes	US	Illinois	G'Lakes
Manufacturing	279%	157%	180%	100.0%	100.0%	100.0%
Durable Goods	266%	119%	153%	60.2%	64.5%	73.8%
Lumber and Wood Products	350%	198%	323%	2.5%	0.7%	1.1%
Furniture and Fixtures	303%	82%	220%	1.5%	1.7%	1.4%
Stone, Clay, and Glass Products	277%	107%	175%	3.1%	2.5%	2.7%
Primary Metal Industries	91%	-57%	-90%	8.4%	8.6%	10.9%
Fabricated Metal Products	270%	166%	208%	7.1%	10.4%	9.8%
Machinery, except Electrical	273%	97%	122%	10.6%	18.0%	15.3%
Electric and Electronic Equipment	377%	125%	160%	8.5%	12.1%	8.9%
Motor Vehicles and Equipment	177%	132%	139%	8.2%	3.2%	18.7%
Transportation Equipment excl. Motor Vehicle	315%	178%	267%	6.0%	2.3%	2.5%
Instruments and Related Products	449%	135%	249%	2.6%	2.9%	1.4%
Miscellaneous Manufacturing Industries	311%	184%	227%	1.6%	1.9%	1.1%
Nondurable Goods	299%	226%	257%	39.8%	35.6%	26.2%
Food and Kindred Products	229%	150%	176%	10.0%	12.6%	8.1%
Tobacco Manufactures	283%	-67%	-42%	1.5%	0.0%	0.0%
Textile Mill Products	163%	290%	114%	3.2%	0.2%	0.4%
Apparel and other Textile Products	181%	48%	203%	3.4%	1.4%	1.0%
Paper and Allied Products	336%	216%	298%	3.7%	2.6%	2.8%
Printing and Publishing	429%	248%	282%	4.7%	7.4%	3.9%
Chemicals and Allied Products	317%	327%	305%	7.1%	6.2%	4.8%
Petroleum and Coal Products	583%	393%	569%	2.6%	2.1%	1.4%
Rubber and Miscellaneous Plastic Products	382%	341%	251%	2.6%	2.3%	3.2%
Leather and Leather Products	38%	-25%	32%	1.0%	0.7%	0.0%

This is an inadequate explanation, however. It does not address, for example, why growth in machinery (except electrical) grew 273 percent for the nation but only 97 percent in Illinois. The answer must lie partially in the composition of the machinery (except electrical) subsector in Illinois versus the composition of that subsector at large. For example, a metal fabricator with very large machines and fixtures adapted to the production of frames for large earth movers would have faired very differently over the past 25 years from a metal fabricator with small flexible equipment easily adapted to the production of disk drive components. Both, however, would fall under the same subsector in the statistics. If the former were in Illinois and the latter in California, the impact on GSP growth for Illinois would probably have been very negative in the early 80s as the earthmover and combine industry fell on hard times while the impact on California's GSP growth would likely have been very positive as the micro-computer industry blossomed. Many effects of this type can not be captured by the statistics because it is in the nature of aggregation to neglect individual differences. At an informal level of analysis, one could suggest that:

- machine tools, automotive related, farm and earth moving equipment, and steel production dominated Illinois and Great Lakes manufacturing in the 60s and 70s;
- these areas all lost ground to foreign competition, experienced problems with aging capital stocks, and struggled with new production technologies over the period;
- as a result, manufacturing growth in Illinois was well below the national figure.[4]

If this was the case, the total GSP growth in Illinois would also be depressed below the national norm. Referring back to Table 1, we see that the other sector with growth conspicuously below average is agriculture. As a percent of GSP, agriculture is smaller in Illinois than in the nation, but this is a deceptive figure. As Table 3 shows, Illinois is the fourth largest farm producer in the country. The top six states, combined produce over 35 percent of the farm output of this nation, but for four out of six, farming is less than 2 percent of their state production. The reason is that state boundaries actually encompass both rural and metropolitan economies. The location of the political boundaries causes figures from the two distinct types of economies to be aggregated. Table 4 presents the 10 states with the highest proportion of their total GSP generated by the farm sector. Some area economies in parts of Illinois far removed from metropolitan centers may have a proportion of farm production even higher than South Dakota; but, because their production is aggregated with Chicago, Rockford, and Peoria, a different statistical picture is presented. In these areas, agriculture has a tremendous impact on the local economy, and a common money supply, labor and capital mobility, and unfettered trade cause the impact to be spread to contiguous areas.

Table 3. Top Ten Agricultural Producers, 1986

	Total GSP			*Farm*			
	millions of $	*% of US*	*Rank*	*millions of $*	*% of US*	*Rank*	*% of GSP*
California	533,816	12.7351%	1	7,963	10.4244%	1	1.4917%
Texas	303,510	7.2407%	3	4,853	6.3531%	2	1.5990%
Iowa	43,836	1.0458%	29	4,574	5.9879%	3	10.4343%
Illinois	209,666	5.0019%	4	3,385	4.4313%	4	1.6145%
Minnesota	75,626	1.8042%	19	3,324	4.3515%	5	4.3953%
Florida	177,729	4.2400%	6	3,208	4.1996%	6	1.8050%
Nebraska	26,521	0.6327%	35	3,190	4.1760%	7	12.0282%
Wisconsin	76,922	1.8351%	17	3,093	4.0491%	8	4.0210%
Kansas	42,472	1.0132%	30	2,823	3.6956%	9	6.6467%
North Carolina	100,961	2.4086%	13	2,065	2.7033%	10	2.0453%

Table 4. Top Ten Agricultural States, 1986

	Total GSP			*Farm*			
	millions of $	*% of US*	*Rank*	*millions of $*	*% of US*	*Rank*	*% of GSP*
South Dakota	9,802	0.2338%	50	1,502	1.9663%	22	15.3234%
North Dakota	10,733	0.2561%	49	1,544	2.0213%	21	14.3855%
Nebraska	26,521	0.6327%	35	3,190	4.1760%	7	12.0282%
Iowa	43,836	1.0458%	29	4,574	5.9879%	3	10.4343%
Idaho	13,170	0.3142%	45	1,076	1.4086%	28	8.1701%
Montana	12,163	0.2902%	46	948	1.2410%	30	7.7941%
Kansas	42,472	1.0132%	30	2,823	3.6956%	9	6.6467%
Arkansas	31,633	0.7547%	33	1,758	2.3014%	17	5.5575%
Minnesota	75,626	1.8042%	19	3,324	4.3515%	5	4.3953%
Wisconsin	76,922	1.8351%	17	3,093	4.0491%	8	4.0210%

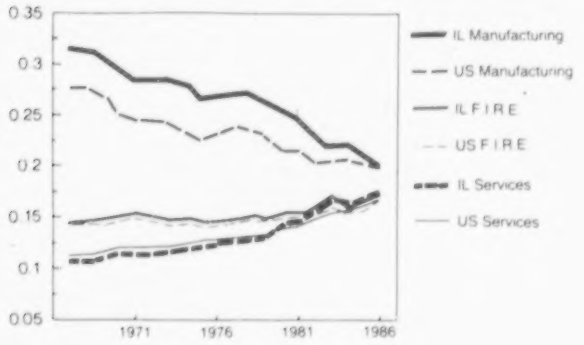
What does this tell us about the future of the Illinois economy? Table 5 presents the industrial composition of the state, regional, and national economies for 1986. The Illinois economy parallels the national economy in industrial composition much more closely than it did in 1966; therefore, growth and employment trends in Illinois will probably parallel national trends more closely than they did in the period included here.

Table 5. Gross State Product by Sector

Sector % of Total, 1986 *Industry*	*US*	*Illinois*	*G'Lakes*
Agriculture, Forestry, and Fisheries	2.2%	1.9%	2.0%
Mining	2.3%	0.8%	0.7%
Construction	4.7%	4.1%	3.6%
Manufacturing	19.7%	20.2%	26.8%
Transportation, Communication, and Public Utilities	9.3%	10.8%	9.2%
Wholesale trade	7.0%	8.5%	6.9%
Retail trade	9.7%	9.4%	9.5%
Finance, Insurance, and Real Estate	16.6%	17.5%	16.2%
Services	16.7%	17.5%	15.4%
Government	11.7%	9.4%	9.6%

Some trends in composition do suggest areas in which Illinois's economy may behave differently from the national economy. Services, finance, insurance and real estate combined represent over one-third of Illinois production, while manufacturing accounts for only one-fifth. Services, finance, insurance and real estate have grown to be larger shares of the Illinois economy than of the national economy while manufacturing's share in Illinois no longer exceeds the national share by the large measure it did in 1966 and is markedly below the regional share. Chart 3 traces these changes over a 20-year period. The trend suggests that services, finance, insurance and real estate will be the sectors whose characteristics will dominate the state economy in the coming years. From Chart 4, which graphs the real growth path of these industries and selected others for comparison, it can be seen that these industries are characterized by steady positive growth and resistance to recessions. One might expect to see these characteristics prevail in Illinois from 1986 to 2006.

Chart 3. Selected Industries as a % of Total GSP



Notes

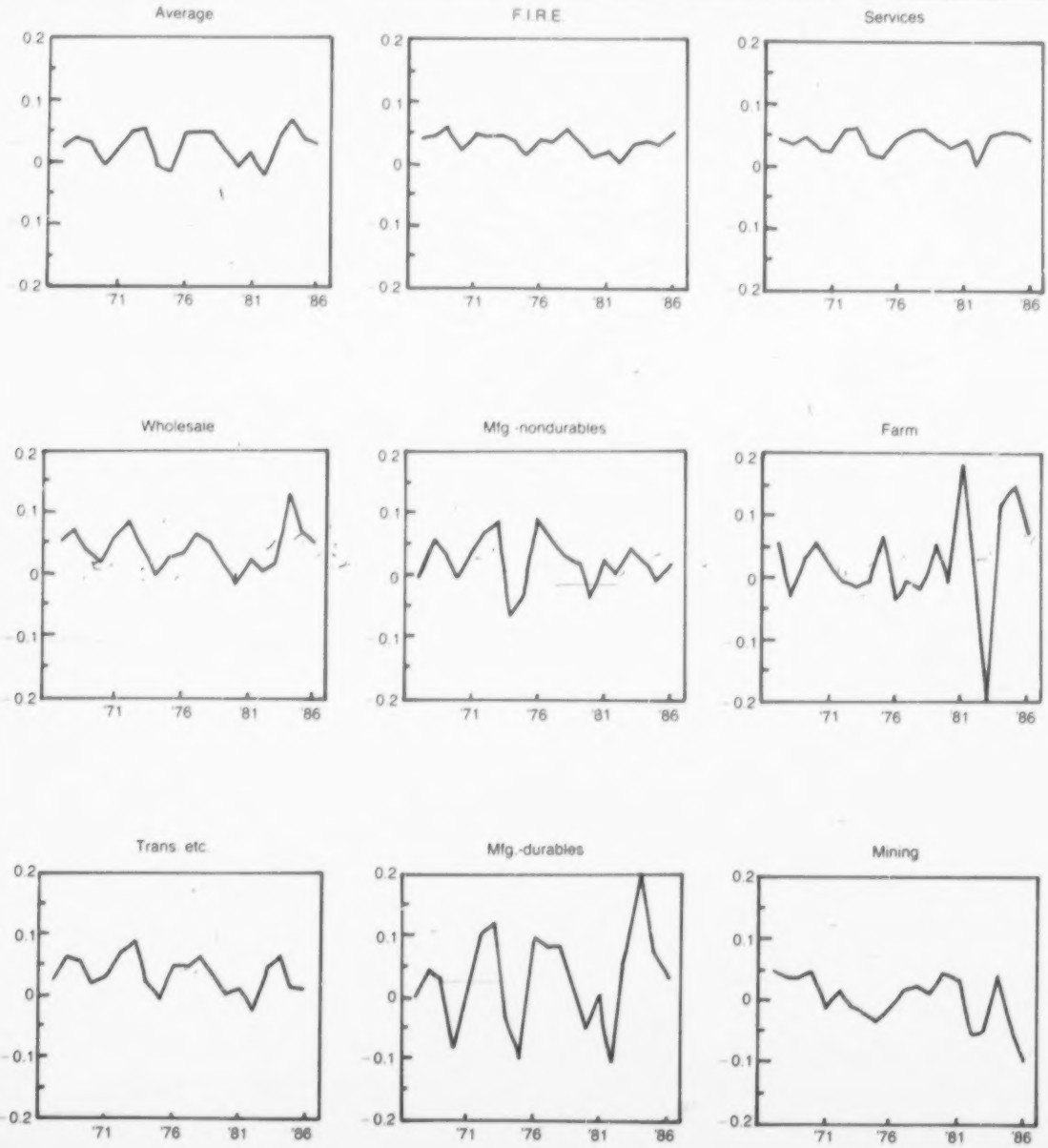
[1]Consider, for example, a high unemployment state contiguous to a low unemployment state: the unemployed laborers in the former will be inclined to commute or migrate to the latter and by so doing will tend to equalize the unemployment rates of the two states.

[2]The sum of GSP for all 50 states plus the District of Columbia will be presented throughout this article; it differs slightly from GDP due to differences in the handling of military personnel stationed abroad and due to the use of differing data sources.

[3]Illinois, Indiana, Michigan, Ohio, and Wisconsin.

[4]It is important to keep in mind that these statistics are affected by the movement of businesses into and out of the area. Hypothetically, if a very large manufacturer relocated to another state, GSP in total and for the appropriate sectors would appear depressed even if the remaining businesses individually experienced outstanding growth. The GSP figures track growth in aggregate production that can be affected by the growth or decline of the businesses of the state *or* by entry and exit of firms.

Chart 4. Annual Real National Growth Rates *(selected industries and an average)*



Illinois Business Indexes

This issue highlights developments regarding consumer price indexes. With the economy in the midst of the longest expansion in the period for which data are available, possible inflationary pressure on the economy is an appropriate topic for examination.

The consumer price index (CPI) provides a measure of the average change in prices over time in a fixed market basket of goods and services. The Bureau of Labor Statistics publishes CPIs for two population groups: (1) a CPI for all urban consumers (CPI-U), which covers approximately 80 percent of the total population and (2), a CPI for urban wage earners and clerical workers (CPI-W), which covers 32 percent of the total population. The CPI is based on prices of food, clothing, shelter, transportation, medical services, and other goods and services that people buy for day-to-day living.

Chart 1 plots the CPI-U annually from 1969 to 1988 and monthly from October 1987 to April 1989. From the annual data it is clear that the 80s have been characterized by annual inflation rates far below those of the 70s. The monthly data do show a trend upward beginning in January 1989. Not too much can be made of a trend in four observations of monthly data: variations in seasonal patterns and data collection irregularities can create distortions to the representation. The odds are that the figures do represent a measurable increase in the rate of price increases, but there are other possible causes of the data pattern. Firm conclusions cannot be made until after the fact.

Chart 2 illustrates the relative importance of the expenditure categories as published by the Department of Labor. Annual inflation rates in these categories are then examined separately for selected years in Chart 3. Medical care is consistently among the higher rates of increase. It currently has a six percent share in importance but will become a larger portion of the typical market basket if prices for medical services continue to outstrip the other sectors, and if consumers are not able to decrease the quantity of these services consumed.

ILLINOIS BUSINESS INDEXES

	Percent Change May 1988–May 1989	May 1989	Apr. 1989	Mar. 1989	Feb. 1989	May. 1988	Apr. 1988
Leading Indicator (MA3)[a]	-3.35	9.97	12.50	12.44	19.57	13.32	12.50
Leading Indicator (MA6)[a]	1.44	14.69	16.11	15.48	16.32	13.25	13.08
Employment-manufacturing (in thousands)[b]	3.93	981	980	978	977	944	944
Average weekly hours-manufacturing[b]	-0.24	42	42	42	42	42	42
Weekly earnings-manufacturing[b]	0.93	$464.39	$465.50	$460.93	$460.24	$460.10	$463.14
Help wanted advertising-Chicago (1967 = 100)[c]	-7.89	105	112	103	111	114	115
Help wanted advertising-St. Louis (1967 = 100)[c]	-4.00	72	78	69	71	75	71
Retail sales (in millions)[d]	4.39	$6,697	$6,441	$6,439	$5,338	$6,415	$6,135
Petroleum products (in thousands of barrels)[b]	-6.57	1,850	1,820	1,925	1,825	1,980	1,985
Vendor performance[e]	-25.30	49%	53%	51%	53%	66%	62%
Building permits (in thousands)							
Residential housing units	-5.70	4.368	4.818	3.250	2.772	4.632	4.112
Value of residential housing	-1.69	$377,644	$380,748	$307,177	$206,798	$384,122	$346,092
Value of nonresidential construction							
Industrial buildings	-0.59	$k30,406	$20,483	$19,000	$23,058	$30,585	$16,511
Office, banks, and professional buildings	-30.47	$45,638	$93,349	$52,442	$16,934	$65,638	$28,256
Stores and other mercantile buildings	34.75	$63,619	$39,739	$39,083	$20,814	$47,211	$33,886
Other	-18.34	$9,463	$7,221	$4,126	$3,333	$11,589	$5,127
Consumer price index (1982–84 = 100)							
North Central US	5.02	121.3	120.8	119.8	119.3	115.5	114.9
North Central/population more than 1,200,000	5.34	122.2	121.9	121.1	120.4	116.0	115.7
North Central/population 360,000 to 1,200,000	4.41	120.8	120.6	119.2	118.6	115.7	115.0
North Central/population 50,000 to 360,000	5.25	122.2	121.2	119.9	119.5	116.1	115.2
North Central/population less than 50,000	4.10	116.8	116.3	115.5	115.1	112.2	111.8
Chicago	5.90	123.9	124	123.0	122.2	117.0	117.1
St. Louis	6.49	121.5	—	119.4	—	114.1	—
		1988:IV	1988:III	1988:II	1988:I	1987:IV	1987:III
Personal income (in millions)[b,f,g]	1.70	$207,832	$204,345	$201,058	$199,986	$197,705	$190,015
Per capita personal income[b,f,g]	1.55	$17,846	$17,559	$17,289	$17,209	$17,025	$16,374

[a]Represents absolute change (percent change not relevant). [b]Recent month is preliminary figure. [c]The Conference Board, *Help Wanted Advertising*, November 1988. [d]Latest month projected by BEBR. [e]Percentage of companies receiving slower deliveries. [f]Seasonally adjusted at annual rates. [g]Percent change between 1987:IV and 1988:IV.

Chart 1. CPI-U, US City Average, All Items

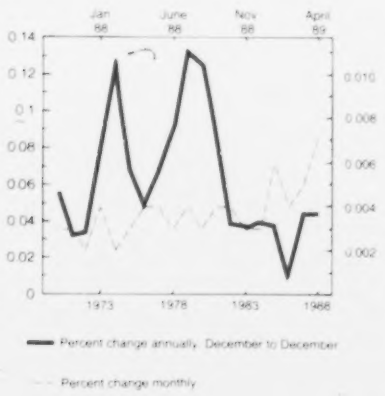


Chart 2. CPI-Expenditure Categories Relative Importance, December 1988

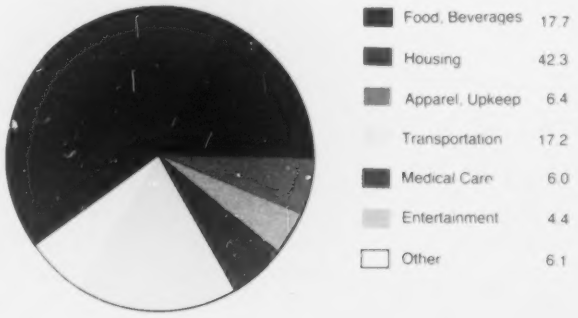
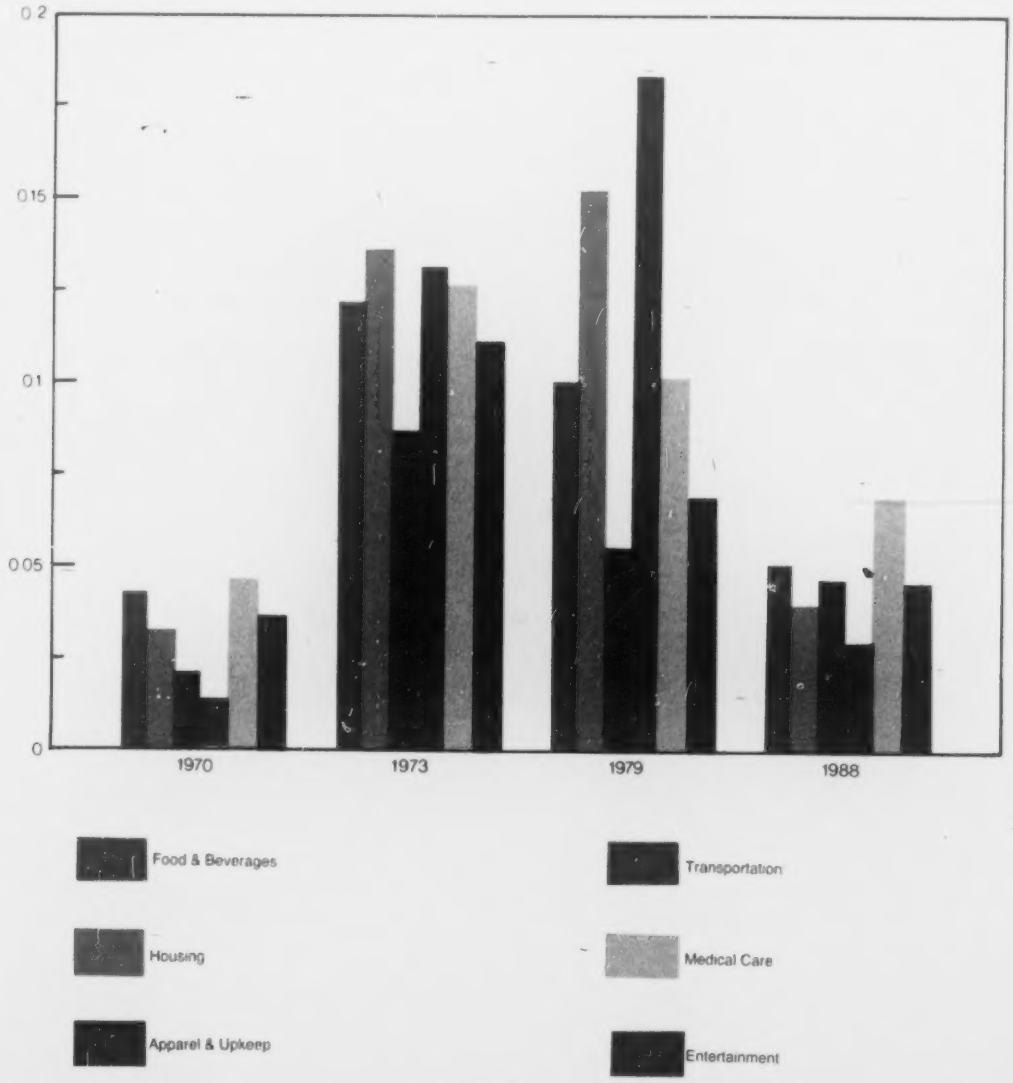


Chart 3. CPI-U, by Expenditure Category *(% change from previous year for selected years)*



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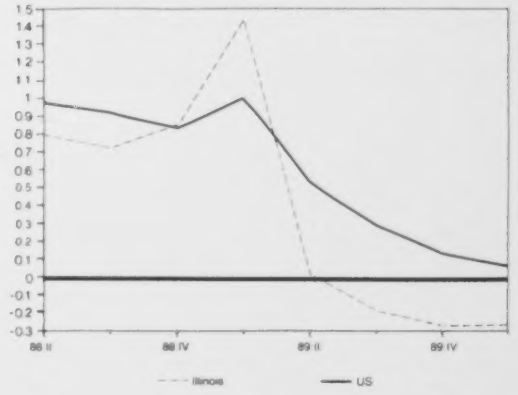
Illinois Economic Outlook

The level of employment in Illinois is expected to stabilize. After a period of modest growth, employment in the state will remain approximately unchanged for the next four quarters according to the Illinois Econometric Model. This pattern is similar to the behavior of employment at the national level, as indicated by the chart. Job growth in the service and trade sectors is expected to offset declines in manufacturing employment, resulting in little change in the level of total employment. Changes in the composition of employment in Illinois are a reflection of the changes occurring at the national level. While total state employment may not change significantly over the next several quarters, the shifting importance of each sector will lead to uneven job growth across the state.

Private Employment Growth
(percentage change from previous quarter)



Illinois Seasonally Adjusted Employment

	History				Forecast			
	88:II	88:III	88:IV	89:I	89:II	89:III	89:IV	90:I
Total private nonfarm (thousands)	4,279.0	4,310.0	4,346.7	4,409.4	4,410.4	4,402.1	4,390.3	4,378.7
Mining	23.9	23.4	22.3	20.6	22.3	22.7	22.7	22.6
Construction	206.6	206.6	209.3	214.8	211.2	207.7	204.2	200.9
Manufacturing	945.4	948.5	960.0	977.5	964.8	950.9	935.2	919.7
Durable	574.7	576.9	586.1	600.4	590.0	579.3	567.0	554.6
Primary metals	54.7	54.9	55.3	55.9	55.7	55.5	54.6	53.7
Fabricated metals	108.8	109.6	111.1	112.0	110.6	108.4	107.3	105.7
Nonelectrical machinery	138.8	140.3	142.0	145.9	143.5	142.5	137.1	133.2
Electrical machinery	122.4	122.2	122.4	121.4	119.7	117.8	115.8	113.8
Miscellaneous durables	150.4	149.5	155.5	165.1	160.4	155.1	152.2	148.1
Nondurable	370.5	371.1	374.3	377.5	374.8	371.6	368.2	365.0
Food products	90.9	90.0	90.4	91.1	90.4	89.6	88.5	87.6
Printing and publishing	109.7	110.0	111.2	112.6	112.4	111.7	111.1	110.6
Chemicals	58.1	58.5	59.7	61.5	61.1	60.6	60.2	59.7
Miscellaneous nondurables	112.1	112.7	112.1	111.6	110.9	109.7	108.4	107.2
Utilities and transportation	301.7	302.8	302.1	300.5	299.4	298.4	297.1	295.8
Wholesale and retail trade	1,255.3	1,268.0	1,269.4	1,287.5	1,295.2	1,297.7	1,298.5	1,298.9
Finance, insurance, and real estate	363.6	363.5	366.5	370.4	372.0	373.5	374.9	376.1
Services	1,183.5	1,196.1	1,215.6	1,240.1	1,245.4	1,251.3	1,257.7	1,264.6

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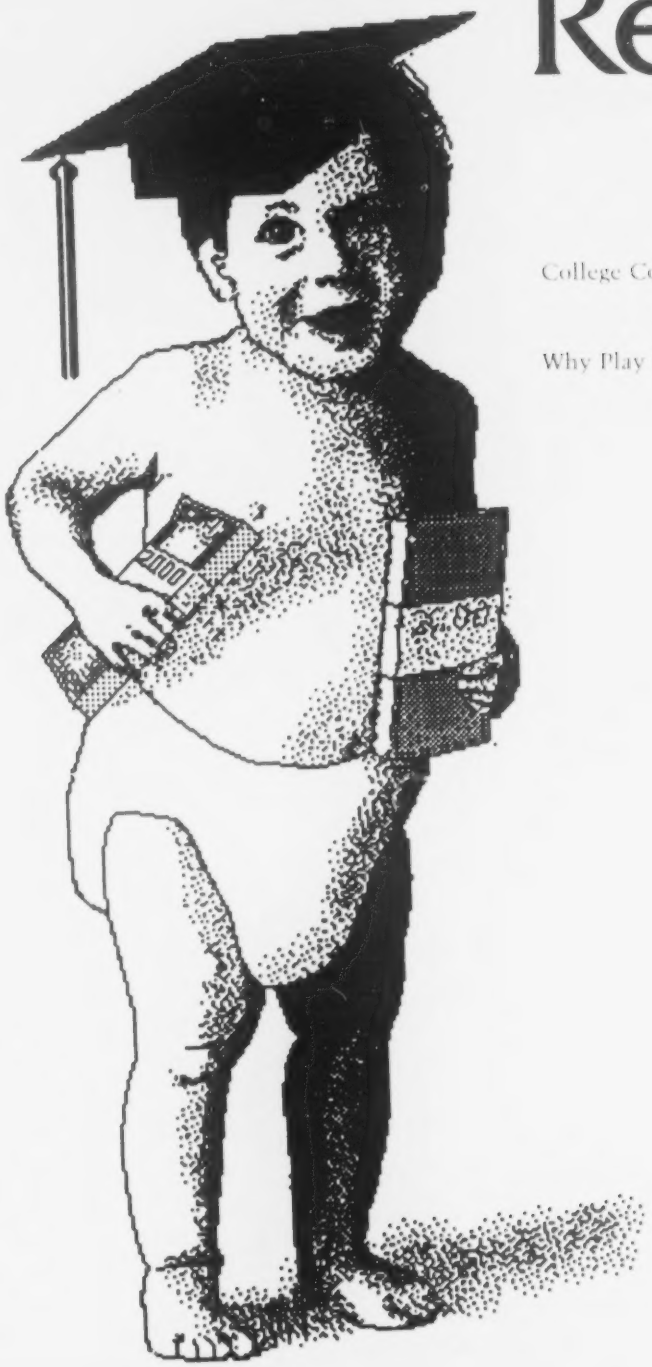

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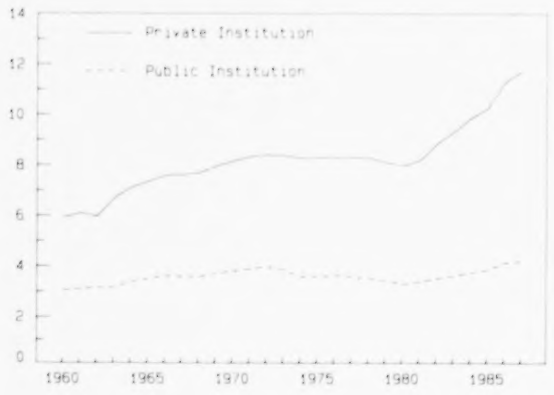
Substantial errors in the initial printing necessitated revisions on pages 3, 4, 7, 12, and 16.

Chart 1. Total Tuition, Room and Board
(in thousands of 1982 dollars)



PAUL C. BISHOP

College Costs: Are You Prepared?

Few financial decisions confronting most parents are as difficult or intimidating as providing for a child's college education. Because of rapid and continuing increases in the cost of tuition, room, board, travel, and books, parents and students are finding it increasingly difficult to save enough money to fund an education. It is especially vexing to plan if the prospective college experience is in the distant future. Even so, it is important for parents to formulate an investment and savings plan that will be sufficient to cover unknown future education expenditures but that is realistic with respect to their current financial resources.

The purpose of this article is to clarify some of the issues surrounding financial planning for college and to highlight some of the uncertainties surrounding this issue. The first section examines the trend in college costs and the increasing burden these costs are placing on parents of all income levels. The second section illustrates the uncertainties of planning for the future by constructing a hypothetical example of future education costs and the resources necessary to establish a college fund. The third section highlights traditional funding alternatives that are currently in use. The last section outlines some recent financial innovations to assist in covering college expenses and details Illinois' education bond program.

Up, Up and Away

Beginning in the late seventies, costs at both private and public institutions increased dramatically. Since 1980 the average annual increase in tuition costs has exceeded 8 percent at public four-year institutions and 10 percent at private schools. The average annual inflation rate for this same period was approximately 6.5 percent. Taken together, these two facts imply that the cost of college has increased in real terms. Chart 1 illustrates the real cost of tuition, room, and board at public and private four-year institutions. While the changes in public school costs have been less dramatic than for private schools, the last several years have witnessed a steady increase in costs. After a period of decline during the seventies, real costs at public universities have risen to the highest level in 30 years. Costs at private institutions have followed roughly the same pattern over the period, but with even sharper increases since 1980.

Tuition costs vary greatly from one state to another. Table 1 indicates the states with the greatest average tuition costs at public and private institutions. From the table we can see that Illinois ranked 11th in average tuition levels among public schools.

Cost increases have varied considerably among states also. Table 2 ranks the 15 states with the greatest real tuition increases at public and private institutions between 1981 and 1986. Illinois ranked sixth, although the increase in public institution tuition costs was far below that of California and Hawaii. For the remaining states not listed in the table, the cost increases were generally between 20 and 50 percent. Only Delaware could boast a real tuition decrease. In terms of private institutions, Illinois ranked 30th in the nation, with an increase in real private tuition costs of about 20 percent, well below the large increases of the leading states listed in the table.

Table 1. States with Greatest Nominal Annual Tuition (1986)

Public Institutions		*Private Institutions*		
State	*Average Tuition*	*State*	*Average Tuition*	*Rank*
Vermont	$2,942	Maine	$9,032	1
Pennsylvania	2,496	Massachusetts	8,953	2
New Hampshire	2,190	Connecticut	8,534	3
Virginia	2,070	New Hampshire	8,401	4
Ohio	1,982	New Jersey	8,221	5
Michigan	1,877	Rhode Island	8,187	6
New Jersey	1,861	California	8,073	7
Rhode Island	1,845	Colorado	7,913	8
Minnesota	1,814	New York	7,364	9
South Carolina	1,743	Maryland	7,274	10
Illinois	1,708	Pennsylvania	7,140	11
Maryland	1,682	District of Columbia	7,128	12
Indiana	1,627	Oregon	7,122	13
Mississippi	1,603	Minnesota	6,843	14
Maine	1,561	Washington	6,837	15

While it is clear that the real cost of a college education has increased, to what degree have there been increases in the burden of providing for college expenses? After all, there have also been increases in real income. Within that broadened context, is it really more difficult today to provide funds for a college education than it was in 1970 or 1960? To derive some objective measure of the burden of college costs, consider the ratio of total costs to median family income. If family income is growing more slowly than college costs, then the relative portion of after-tax disposable income devoted to sending a child to school is larger. In that sense, we may say that the burden is greater. Charts 2 and 3 illustrate this measure and present an interesting picture. With a few brief exceptions, between 1960 and 1979 public school costs were a decreasing percentage of median family income. In 1960, tuition, room, and board accounted for approximately 16 percent of median family income. By 1979, college expenses were less than 13 percent of family income. However, the trend reversed in the late seventies and, for the most current figures available, total student charges account for about 15 percent of income. By this measure, it is no more difficult to fund a college education today than it was in the early sixties.

The story for private schools is quite different. From 1960 to 1979 the ratio of college costs to median family income fluctuated between 30 and 34 percent of income. However, between 1979 and 1987, the burden of college costs increased by more than one-third from

Table 2. States with Greatest Increase in Real Tuition Costs (1981–1986)

Public Institutions		*Private Institutions*		
State	*Percentage Change*	*State*	*Percentage Change*	*Rank*
California	243.9	Idaho	179.0	1
Hawaii	160.8	New Jersey	57.8	2
Texas	93.4	Nevada	46.8	3
Virginia	93.2	Texas	45.5	4
Arizona	87.0	West Virginia	44.2	5
Illinois	79.3	Georgia	42.2	6
Louisiana	78.6	Montana	40.0	7
Mississippi	76.5	Maine	37.5	8
South Carolina	66.8	Colorado	36.2	9
Connecticut	61.6	District of Columbia	36.1	10
West Virginia	52.4	Massachusetts	35.8	11
New Jersey	52.1	New Hampshire	34.8	12
Washington	51.5	Maryland	34.7	13
North Carolina	49.1	Louisiana	34.3	14
Alaska	49.0	Minnesota	33.5	15

Chart 2. Total Public Tuition, Room and Board
(percent of median family income)

Chart 3. Total Private Tuition, Room and Board
(percent of median family income

about 30 percent to 43 percent of income. Without a doubt, a private school education is far more expensive than it has been for the last three decades, both in real terms and relative to the resources most students and parents have available.

The recent increase in college expenses has been especially noticeable because it was preceded by a period of constant or decreasing costs. When real costs began to increase about 1979, financial plans of the preceding decade were suddenly insufficient to meet the requirements of a college education in the eighties. Students and parents found it necessary to increase current commitments to future education funds at a time when the deep recession of the early eighties increased the uncertainty surrounding family investment plans and hindered the ability of many to save for the future.

What if . . .

If the recent behavior of college costs is any indication of what the future holds, then the prospect of formulating investment plans to assure a college education is quite intimidating. While a longer planning horizon lessens the immediate financial burden, it also requires that decisions today be made about events many years into the future. To formulate a concrete example, assume that the nominal costs of room, board, and tuition continue to increase at approximately the same rate as experienced over the last 10 years. For public and private schools, the annual increases have been approximately 8 percent and 10 percent, respectively. I purposely ignore the additional costs of books, travel, and other incidental expenses, not because they are insignificant, but rather, because these costs vary greatly among schools and individual students. In addition, the figures that follow can be interpreted as conservative estimates based on the assumptions given. Table 3 shows estimates of the average cost of room, board, and tuition at public and private institutions depending on the current age of the college-bound child. The older the child, the less the total expense, but the length of time available to make

Table 3. Annuity Requirements for College Funding

Age of Child	Total Nominal 4-year Cost	Public Schools (8 percent annual cost increase) Percentage Return on Investment							
		4%	6%	8%	10%	12%	14%	16%	18%
17	$27,020	$5,276	$5,213	$5,150	$5,088	$5,027	$4,966	$4,906	$4,847
16	29,181	4,653	4,550	4,448	4,348	4,250	4,154	4,059	3,966
15	31,516	4,220	4,083	3,950	3,819	3,692	3,568	3,448	3,331
14	34,037	3,907	3,740	3,578	3,422	3,271	3,125	2,985	2,850
13	36,760	3,674	3,479	3,292	3,112	2,940	2,776	2,620	2,472
12	39,701	3,497	3,276	3,065	2,864	2,674	2,494	2,325	2,166
11	42,877	3,362	3,115	2,880	2,660	2,453	2,260	2,081	1,914
10	46,307	3,259	2,985	2,729	2,490	2,268	2,063	1,874	1,701
9	50,012	3,181	2,880	2,602	2,345	2,109	1,893	1,698	1,520
8	54,012	3,123	2,795	2,494	2,220	1,971	1,746	1,544	1,364
7	58,333	3,081	2,726	2,402	2,111	1,849	1,616	1,410	1,228
6	63,000	3,053	2,669	2,323	2,015	1,742	1,501	1,291	1,108
5	68,040	3,037	2,623	2,254	1,929	1,645	1,398	1,185	1,003
4	73,483	3,030	2,586	2,194	1,853	1,558	1,305	1,091	909
3	79,362	3,033	2,557	2,141	1,783	1,479	1,221	1,005	825
2	85,711	3,044	2,534	2,094	1,720	1,406	1,144	928	750
1	92,568	3,062	2,517	2,053	1,663	1,339	1,073	857	683
0	99,973	3,087	2,506	2,016	1,610	1,277	1,008	793	622

Age of Child	Total Nominal 4-year Cost	Private Schools (10 percent annual cost increase) Percentage Return on Investment							
		4%	6%	8%	10%	12%	14%	16%	18%
17	$82,342	$16,064	$15,865	$15,667	$15,472	$15,279	$15,089	$14,901	$14,715
16	90,576	14,429	14,103	13,782	13,467	13,157	12,854	12,556	12,264
15	99,633	13,329	12,892	12,464	12,047	11,642	11,247	10,863	10,491
14	109,597	12,568	12,027	11,502	10,994	10,504	10,032	9,578	9,142
13	120,556	12,037	11,394	10,776	10,184	9,618	9,078	8,564	8,076
12	132,612	11,671	10,927	10,218	9,545	8,908	8,307	7,740	7,208
11	145,873	11,429	10,582	9,782	9,030	8,326	7,667	7,055	6,486
10	160,461	11,284	10,331	9,438	8,608	7,838	7,127	6,473	5,873
9	176,507	11,217	10,153	9,166	8,257	7,423	6,663	5,971	5,345
8	194,157	11,216	10,034	8,950	7,962	7,066	6,258	5,533	4,885
7	213,573	11,271	9,966	8,780	7,711	6,753	5,901	5,145	4,479
6	234,930	11,375	9,939	8,648	7,497	6,478	5,582	4,799	4,118
5	258,423	11,523	9,948	8,547	7,312	6,232	5,295	4,487	3,795
4	284,266	11,713	9,990	8,473	7,151	6,011	5,034	4,204	3,503
3	312,692	11,941	10,060	8,422	7,012	5,810	4,796	3,947	3,239
2	343,962	12,205	10,155	8,390	6,889	5,627	4,577	3,710	2,999
1	378,358	12,506	10,275	8,376	6,782	5,459	4,374	3,492	2,780
0	416,194	12,841	10,417	8,377	6,687	5,304	4,186	3,290	2,579

plans is also shorter. From the table we can see that the expected cost of college for a child born in 1989 is $99,973 at a public school and $416,194 at a private school.

The remaining entries in the table indicate the amount that must be invested each year at various after-tax interest rates to provide a fund sufficient to cover anticipated college costs, assuming that the future undergraduate begins college at age 18. For example, in the case of an after-tax yield of 8 percent per year and a child five years old, $2,254 must be invested at the beginning of each year for the next 17 years (13 years prior to, and for 4 years during, college) to meet expected public university expenses of $68,040. Similarly, with an investment that yields 10 percent per year, $6,687 must be set aside for the next 22 years if a child born in 1989 is to have a sufficient college fund to attend a private school. Other combinations of age and interest rates are interpreted similarly.

To illustrate the dynamics of saving for college, consider a specific example among the many possible ones given in Table 3. Suppose that a college fund is established for a child born in 1989 with the intention of providing financial resources for attendance at a private university. We know from Table 3 that an annual contribution of $6,687 is required if the after-tax return is 10 percent. Table 4 illustrates this scenario. The first column indicates the year and the second column lists the child's age in a given year. The third column indicates the size of the college nest egg at the beginning of each period and the fourth column shows the contribution made each period to the college fund. The fifth column illustrates the amount of after-tax interest that has accumulated on the investment each period after any college expenses, shown in column 6, have been paid. Finally, the last column shows the ending balance for each period.

The advantages of a long planning horizon are evident in this example. First, contributions over the course of 22 years lessen the annual burden of funding an investment plan of the type illustrated in the table. Second, the length of time involved allows the investment to generate sizable returns relative to the total contributions over the many periods. It should also be emphasized that we are assuming after-tax rates of return. Uncertainties and miscalculations regarding the burden of taxes on investment returns could significantly reduce the effectiveness of any financial plan. Finally, although the example in Table 4 has used the longest planning horizon possible, similar comments apply to investment plans of parents with children that may attend college in the near future. However, the benefits of long-term investment gains are less.

The calculations presented in Tables 3 and 4 do not necessarily represent what will actually happen over the next two decades. Several factors could change over the next several years that would lead to either higher or lower college costs. Other funding and investment alternatives may reduce the burden on parents and students. Instead, the tables highlight the difficulty of saving for the future and, for many parents and students, the financial impossibility of formulating a plan that is sufficient, in itself, to provide for college expenses, if current trends continue.

Table 4. College Funding Illustration

			Private School			
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Year	Age of Child	Beginning Balance	Annual Contribution	Interest Income[a]	College Expense	Ending Balance
1989	0	$0	$6,687	$669	$0	$7,355
1990	1	7,355	6,687	1,404	0	15,446
1991	2	15,446	6,687	2,213	0	24,346
1992	3	24,346	6,687	3,103	0	34,136
1993	4	34,136	6,687	4,082	0	44,905
1994	5	44,905	6,687	5,159	0	56,751
1995	6	56,751	6,687	6,344	0	69,781
1996	7	69,781	6,687	7,647	0	84,114
1997	8	84,114	6,687	9,080	0	99,881
1998	9	99,881	6,687	10,657	0	117,224
1999	10	117,224	6,687	12,391	0	136,302
2000	11	136,302	6,687	14,299	0	157,288
2001	12	157,288	6,687	16,397	0	180,372
2002	13	180,372	6,687	18,706	0	205,764
2003	14	205,764	6,687	21,245	0	233,696
2004	15	233,696	6,687	24,038	0	264,421
2005	16	264,421	6,687	27,111	0	298,218
2007	17	298,218	6,687	30,490	0	335,395
2008	18	335,395	6,687	25,240	89,678	277,644
2009	19	277,644	6,687	18,569	98,645	204,254
2010	20	204,254	6,687	10,243	108,510	112,674
2011	21	112,674	6,687	0	119,361	0
TOTAL			$147,106	$269,088	$416,194	

[a]10 percent annual after-tax interest rate.

Dear Mom and Dad, Send Money

The preceding discussion has illustrated the difficulty of paying for a college education simply by saving or investing. The fact that there are more than 12 million students currently enrolled in higher education suggests that there are important sources of funding other than a college nest egg. While the example of future college costs assumes that parents alone bear the burden of providing a college education, this assumption is not necessarily correct. Many undergraduates work during summer breaks or hold a part-time job during the school year. In addition, depending upon the requirements, certain students are eligible for scholarships and tuition and fee waivers, both because of financial need and scholarly merit.

Table 5 indicates the most frequent sources of funding for most college students. The second column indicates the percent of students that utilized the resource indicated in the first column. For example, 72 percent of college students relied upon some financial support from parents. The third column shows the percentage of college costs received from each resource.

Table 5. Average Resources Per Student (1986)

Resource	*Percent of Students Utilizing Resource*	*Of Total Resources Available, Percent from Each Resource*
Parental assistance	72%	40%
Pell (Basic) Grant	16	4
Supplemental Education Opportunity Grant	5	1
State Scholarship or grant	13	3
College scholarship or grant	17	7
Other scholarship or grant	7	2
Guaranteed Student Loan	25	10
National Direct Student Loan	6	2
College loan	4	1
Other loan	4	2
College Work-Study Program	9	2
Part-time employment	31	5
Full-time employment	3	1
Saving from summer work	51	11
Other savings	26	6
Other resource	7	3

Source: Based on data from *The American Freshman: National Norms for Fall 1986*, A. W. Astin et al., American Council on Education and the University of California at Los Angeles.

From the table we see that parental assistance covered 40 percent of school expenses. After parental assistance, most students relied upon saving from summer work and part-time employment during the school year, although together these sources covered only 16 percent of annual college costs. One of the most significant changes to occur in recent years has been the tremendous growth in Guaranteed Student Loans to finance college expenditures. Approximately 25 percent of all students received some funding from these loans in 1986, compared to 7 percent in 1976.

As the table indicates, scholarships are also an important component in most students college financing plans. Funding for college-administered scholarships and fellowships increased by nearly 90 percent from approximately $2.2 billion to $4.2 billion between 1979 and 1985. If the change in scholarship monies is allocated between public and private schools, there is a marked divergence in funding increases. For public schools, scholarships and fellowships increased by 62 percent, while tuition at all public universities increased by 66 percent. Private universities have experienced the sharpest increase in tuition and fees, about 80 percent over the period. At the same time, scholarship funds grew by 110 percent. Private schools appeared to be more successful at capturing funds to offset tuition increases. However, if tuition increases were used to supplement scholarship funds, then an additional burden was placed on students that did not qualify for scholarships but were, nonetheless, charged higher tuition.

So What's New

The Tax Reform Act of 1986 made the task of establishing a sensible investment strategy increasingly difficult. Prior to tax reform, some parents funded a child's college education by contributing income-producing property to the Clifford trust. Income from such assets was usually taxed at the child's lower rate. The benefits from this funding alternative have been eliminated by the enactment of the "kiddie tax." Under current law, investment income of children in excess of $1,000 is taxed at the parent's higher rate until the child reaches fourteen.

For parents with more time to plan, there are several alternatives that may assist in meeting college expenses. One such strategy is investment in series EE savings bonds. The interest on these bonds is tax-exempt if the proceeds are used to pay college tuition. However, there are certain requirements that may diminish their appeal. First, only bonds issued after 31 December 1989 qualify for tax-exempt status. Furthermore, the full exemption applies only to those with modified adjusted gross income (adjusted gross income plus tax-deferred contributions to IRAs, Social Security benefits, or passive investment losses) of

$60,000 or less for a married couple filing jointly. The exemption is phased out as income approaches $90,000. In addition, the bonds must be issued to the person responsible for paying the future tuition bill. In most cases, this will be the parents, unless the student is the legal dependent of another family member.

Zero coupon bonds are a basic investment vehicle that may be used to offset college costs. These bonds are sold without interest coupons at a larger discount than other types of bonds. Their rate of return is known with certainty and, as with EE bonds, the maturities can be staggered to meet expected expenses as they occur.

With the elimination of the Clifford trust, many parents have established a 2503(c) trust, called the Minors' Trust. The advantages are that the trust qualifies for the $10,000 annual gift tax exclusion, and income of up to $5,000 from the trust is taxed at the lowest rate. A further consideration is that assets placed in the trust are removed from the parents taxable estate.

Another investment alternative that has received much attention is the prepayment of tuition when the prospective college student is still quite young. At certain institutions and state university systems, the parents may pay a fixed fee soon after the birth of a child. In return, the school assumes the risk of higher tuition costs by accepting the fee as payment in full for any future tuition bills attributable to the child. Such prepayment plans are not available in many states.

Before an investment in prepaid tuition is made, there are several considerations. What are the eligibility restrictions regarding student admissions to the candidate institution? Is the plan insured in the event that the institution ceases to exist? Does the plan cover all expenses or only tuition? How many years of school are covered by the plan? What are the residency requirements and what happens if the family moves to another state? Are there refund conditions in the event that the student is not admitted to the institution? Some of the most important points yet to be resolved are how plans of this nature will be taxed, now and in the future, and who pays any federal or state taxes that are due.

In January and October of 1988, Illinois held two public sales of state-backed zero coupon bonds as part of the State of Illinois College Savings Program. Under this program the state sold bonds, in $5,000 denominations, with discounts determined by the number of years to maturity. The bonds are exempt from both state and federal tax whether or not they are used for education expenses. If the bonds are held to maturity and the proceeds are used to meet education expenses at an Illinois higher education institution, a tuition credit of up to $400 per $5,000 of bonds is available. An additional advantage of the program is that the first $25,000 in bonds are not counted as part of a parent's assets in an application for financial aid. In the past, certain banks and brokerage houses have served as agents in the bond sales.

A Final Word

Financial planning for college is an increasingly complex subject. With the growing array of financial alternatives available and the uncertainty surrounding future cost increases, assistance of a competent financial planner may be useful. While this article has touched on a few of the financing alternatives, there are certainly others that are available and perhaps more appropriate given the different needs and resources of specific students and parents. Perhaps the only rule of thumb that applies to all parents is that early and prudent planning is required to avoid the disappointment of too few resources and too little time.

Financial Assistance for College: Sources of Information

The College Blue Book: Scholarships, Fellowships, Grants, and Loans. 21st ed. New York: Macmillan Publishing Co. 1987. Lists sources of financial aid for high school seniors and more advanced students.

The College Cost Book 1989–90. 10th ed. New York: College Entrance Examination Board, 1989. A guide that explains the process of applying for financial aid, with numerous examples, worksheets, and sources of additional information.

Financial Aid for Minorities in Business. Garret Park, MD: Garret Park Press, 1987. Sources of financial aid opportunities for minority students in the business field.

Loren Renz, ed. *Foundation Grants to Individuals.* 6th ed. New York: Foundation Center, 1988. Includes a variety of financial aid opportunities and scholarships offered by US foundations.

Higher Education Opportunities for Minorities and Women. Washington, D.C.: US Government Printing Office. 1986. Number 065-000-00252-3. General information about aid and educational opportunities for minorities and women by specific fields of study.

Willis Johnson, ed. *Directory of Special Programs for Minority Group Members: Career Information Services, Employment Skills Banks, Financial Aid Sources.* 4th ed. Garret Park, MD: Garret Park Press, 1985.

Oreon Keeslar, ed. *Financial Aids for Higher Education, 1988–89.* 13th ed. Dubuque, IA: Wm. C. Brown Company., 1986. A listing of more than 3,000 aid sources for college freshmen.

Gail Ann Schachter. *Directory of Financial Aids for Women, 1987–88.* Redwood City, CA: Reference Service Press, 1987. Lists a variety of financial aid sources, grants, and loans for women.

Student Aid Annual, 1988–89. Moravia, New York: Chronicle Guidance Publications, Inc., 1988. Financial aid sources sponsored by federal and state governments, labor unions, and other organizations not affiliated with postsecondary institutions.

The Student Guide: Five Federal Financial Aid Programs. Washington, D.C.: US Government Printing Office, 1988. Number 511T. Discusses five financial aid programs sponsored by the federal government.

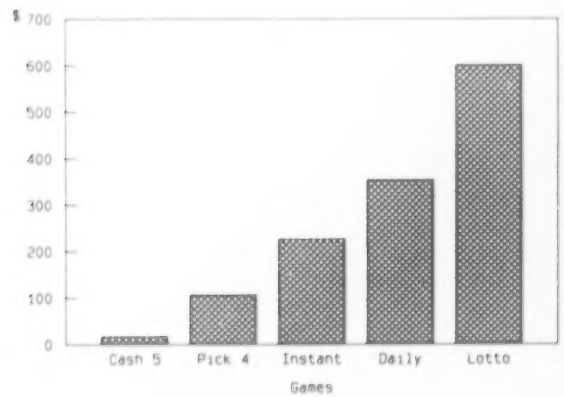
MICHAEL P. GILVARY and JANE H. LEUTHOLD

Why Play the Illinois Lottery?

The Illinois lottery began selling tickets on 30 July 1974. By FY 1990, the net proceeds of the Illinois lottery are projected to be $580 million, making the lottery the fourth largest source of general funds income in the state.[1] During its lifetime, the lottery has distributed more than $4.6 billion in prizes and has created over 540 millionaires.

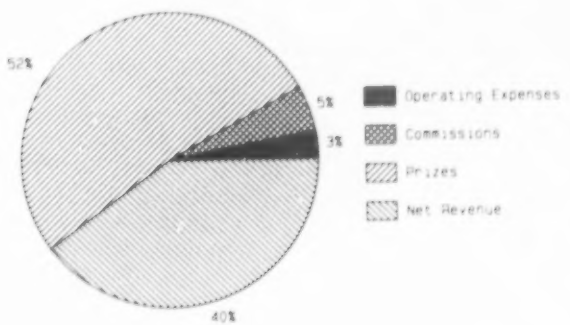
Currently, the lottery sponsors five games, Pick Four, Instant, Daily, Lotto, and Cash Five. By far, the largest gross sales are from the Lotto game that began in fiscal 1983 (see Chart 1). Gross sales from that game in fiscal year 1988 were over $600 million. In order to maintain player interest and encourage participation, the state is exploring new game possibilities. The Department of the Lottery is considering participating in a television game show structured around an instant ticket drawing and prize.

Chart 1. Illinois State Lottery FY 1988 Gross Sales by Game *(millions of dollars)*



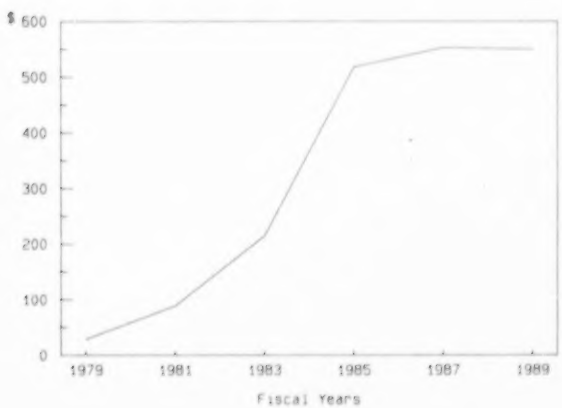
Net revenue from the lottery is computed by subtracting prizes, commissions, and operating expenses from gross revenue. As seen in Chart 2, approximately 52 percent of gross revenue in FY 1989 went for prizes. Another 5 percent went to commissions and 3 percent to operating expenses. This left 40 percent of the lottery dollar for net revenues.

Chart 2. How the Illinois Lottery Dollar is Spent, Fiscal Year 1989



Although net revenue from the lottery has increased dramatically in the last 11 years, most of that growth occurred prior to 1985 (see Chart 3). Between 1979 and 1985, net revenue from the lottery increased from $28 million to $318 million, about eleven-fold. Since 1985, lottery revenues have leveled off.

Chart 3. Illinois State Lottery Net Revenue



In an earlier issue of the *Illinois Business Review*, Mary Laschober provided a financial overview of the Illinois lottery. The purpose of the present article is to examine why Illinois citizens play the lottery. What motivates people to spend a dollar on a lottery ticket? Theory suggests several motives may be at work.

The Expectation of Coming Out Ahead

Some people play the lottery because they expect to come out ahead—the mathematical expected value of the ticket is greater than the nominal price of the ticket. Theoretically, it is possible for this to happen occasionally in games such as Lotto where the prize money is carried over from one drawing to the next when the first drawing did not produce a winner. However, it is rare for the carryover to be great enough to raise the expected value of the ticket above the price.

Consider a simple example in which 50 percent of sales are paid out to the winner (if there is one). If there is no winner, the prize is carried over until the next drawing. The expected value of a ticket is equal to payout divided by sales:

EXPECTED VALUE = PAYOUT / SALES.

Since payout is the probability that there is a winner times the prize pool, expected value can be rewritten:

EXPECTED VALUE = (P x X) / SALES,

where P is the probability of someone's winning and X is the current value of the prize annuity. The probability of someone winning is less than one since there is not always a grand prize winner.

However, since the prize, X, is 50 percent of sales plus any carryover from the previous drawing,

X = (.50 x SALES) + CARRYOVER,

and expected value further reduces to:

EXPECTED VALUE = P [.50 + (CARRYOVER / SALES)].

The expected value of a ticket is a function of the probability of someone's winning the prize and of carryover as a percent of sales.

Note that even though 50 percent of sales is allocated to the prize pool for each drawing, the expected value of a ticket for a drawing without any prize money carried over from the previous drawing will be less than $.50 because P is less than one.

The expected value of a ticket can only exceed $1 (the price of a lottery ticket) in this example if carryover is more than 50 percent of sales. Because P is less than one, expected value will only be greater than one if the term in brackets is greater than one. For such a situation to emerge, it is necessary that CARRYOVER / SALES be greater than .50. Since this occurs only rarely in real games, in general the expected value of a lottery ticket is less than its price.

Enjoyment from Gambling

The risk-loving gambler is willing to pay the implicit cost of the ticket (the difference between the nominal price and the probable return) for the chance to play the game because he receives more utility from the game than he loses from the predicted loss. The entertainment aspect of gambling has been overlooked by most of the psychologists who have studied gambling because they have assumed that the utility of gambling is zero.

The Anticipation of Sudden Wealth

The enjoyment of sudden wealth for its own sake has been acknowledged in the past. Charles Lamb's essay, *The Illustrious Defunct*, tells the story of a man who mistakenly believes that he has won 20,000 pounds in the lottery. One of the reasons that people buy lottery tickets is that they like to dream of being wealthy. "To be rich in our dreams is the only kind of riches most of us are ever likely to possess. Who, without a twinge of conscience, could grudge toiling mortals this handful of fairy gold?"

Misinterpretation of the Odds of the Game

In 1951 F. Mosteller and P. Nogee experimented with students and dice games and found that even after the probabilities had been explained to their subjects, they did not all make the bets that yielded the highest expected value: "In spite of extensive instruction . . . some take wagers which lead to losses in the long run."

Students aside, there is reason to believe that most people who buy lottery tickets are not fooled into thinking that the tickets have a positive expected yield. The lottery commission publishes its "take-out" ratio, and it is common knowledge that the state makes a profit on the lottery. Therefore, it is safe to assume that the players know that the game is stacked against them.

Furthermore, if they were fooled at first, players would eventually drop out of the game as experience taught them that the expected value of the ticket is less than the nominal price of the ticket. But the lottery has grown in popularity over the years. Although most players may not be able to figure out the exact mathematical expected value of a Lotto ticket when money is carried over from one drawing to the next, it would seem reasonable to state that misinterpretation of the risks plays a small role in explaining the volume of lottery playing.

Proceeds Go to a Worthy Cause

Although most lottery players would not simply donate money to the Common Education Fund, many players do rationalize that "even if their ticket is not a winner, the money will go to a good cause." Within this context, the state-run lottery is comparable to fund raisers of other charitable organizations. Most states, including Illinois, play on the "good cause" aspect of the decision process by declaring that the proceeds will go to a special purpose within the budget. According to the most recent state budget, "Illinois school children reap the benefits of increased lottery sales, since proceeds from lottery revenues are deposited into the Common School Fund."

While it is true that since 1985 proceeds from the Illinois lottery have been deposited into the Common School Fund, it is not clear that Illinois school children have "reaped the benefit." The Table shows the allocation of lottery money to the common school fund over the past four years. Prior to 1985, all lottery money went into the general fund. Beginning in August 1985, lottery money was transferred into the education fund rather than the general fund. The table shows that even though lottery transfers averaged over $540 million per year over the past four fiscal years, general fund appropriations for elementary and secondary education increased by only $186 million over the period. Funds from the lottery appear to be replacing, rather than supplementing, general revenue funds in the financing of education.

Illinois Lottery Money *(millions of dollars)*

Fiscal Year	*General Fund Appropriations for Elementary and Secondary Education*	*Lottery Transfers to State Common School Fund*
1989	$2,823[a]	$550.0[a]
1988	2,696	524.4
1987	2,823	553.1
1986	2,637	551.7

Source: Illinois State Lottery Comptroller's Office, Springfield, Illinois State Budgets.
[a]Estimated

Compulsive Gambling

The problem of "pathological gambling" was summarized by Rena Nora, M.D.:

> There is . . . a growing population of vulnerable, high-risk individuals estimated at between three million and ten million people who fit the criteria for "pathological gambling" as defined . . . (by) the American Psychiatric Association. Such persons are chronically and progressively unable to resist gambling which, ultimately, leads to the disruption or damage of family, personal and vocational pursuits.

Given that there is a segment of the population that has psychological problems related to gambling, the effect of the lottery on these problems can become an important policy issue. However, it still must be shown that the lotteries actually contribute to the problem of compulsive gambling.

The (British) Royal Commission on Betting, Lotteries, and Gaming, 1949–1951, found that compulsive gamblers tended to bet on wagers that were characterized by: a high probability of winning, a high level of bettor participation (handicapping), and/or a

quick turnaround on the wagers so that the gambler could immediately bet his winnings (or try to recoup his losses). Certainly, the Lotto and Daily type of game, with their delays between drawings, are relatively free of the habit-forming characteristics of the betting activities that are common to casinos and race tracks. Only the Instant type of lottery games would appear to present any hazards to the player's mental health.

Our Study

In an attempt to provide some insight into why people play the Illinois lottery, we analyzed some recent Lotto data for the period from 15 January 1986, through 26 September 1987. During that period, the Lotto-6 game had two drawings a week, Wednesday and Saturday, until the Wednesday drawings were replaced by the Lotto-7 game on 22 April 1987.[2] The Lotto games allow the players to pick their own set of numbers, either two sets of six out of 44 or one set of seven out of 39.[3] The prizes are determined on a parimutuel basis, and the grand prize pool is added to the next drawing grand prize pool if no one wins the grand prize.[4]

The data were used to estimate a simple lottery demand function relating sales to the expected value of a ticket, the structure of the game, the size of the jackpot, the probability of winning, the "freshness" of the game, the number of drawings since someone won the jackpot, and the day of the week. Here we present only the results.

As anticipated, the expected value of a ticket has a positive influence on lottery sales. Expected value was computed taking into account consolation prizes. The results show that people tend to buy more lottery tickets when the expected value of winning is high. It is interesting to note that over the period of this study, expected value ranged from $.30 to $.84. Never did expected value exceed $1, the price of a ticket.

We also found that people buy fewer tickets the more unequal the prize structure of the game. This is an unexpected result since people who buy lottery tickets for the love of gambling should respond by buying more tickets the more unequal the prize structure.

Our results also showed that the size of the jackpot has a positive influence on sales. This result is expected because of the direct relationship between the size of the jackpot and the expectation of gain. On the other hand, we found that the accumulation variable, measuring the number of drawings since someone won the jackpot, has a negative influence on sales. The size of the jackpot is apparently more important to ticket buyers than the number of days since a win.

We further found that the probability of winning influences ticket buying. For the Lotto-6 game, the probability of winning is .003049, while for the Lotto-7 game it is .012048. People responded to this by purchasing more Lotto-7 tickets, other things being equal.

Our data did not show that the "freshness" of the game stimulates sales. If players become bored with the same game, sales should go up when the game is fresh and fall as the number of days since a change increases. Our results did not confirm this. We found that the farther away from a change, the higher the sales. It is possible that new interest in the lottery after a change is really caused by the advertising blitz that accompanies the change and not by the change itself. Thus, the advertising may induce some irregular players to buy a few tickets; at the same time, more regular customers, who might prefer a consistent set of rules may be discouraged by the change. If such behavior were triggered by changes, then we would see the type of results that are, in fact, shown in the data. Finally, we found that the day of the week makes a difference to ticket sales. As anticipated from general observation, the Saturday drawings were found to be quite significantly more popular than the Wednesday drawings.

Are players of the Illinois lottery behaving rationally when they buy an Illinois lotto ticket? While we found that ticket sales do increase as the expected value of a ticket goes up, at no time during the period of our study did the expected value of a ticket exceed the ticket price. Hence, there must be other explanations for people's behavior. We found little evidence that the love of gambling or the excitement of a change spurs lottery sales. Perhaps misinterpretation of the odds or mistaken notions about the use of the revenues explain some sales. Or maybe playing the lottery is just plain fun.

Notes

[1]A list of sources is available from the authors upon request.
[2]The Lotto-7 game was replaced by Cash 5 on 4 May 1988.
[3]Since 7 June 1988, players can choose two sets of six out of 54 or one set of five out of 39.
[4]Parimutuel betting means that the winners divide, in proportion to their wagers, the amount of the bet, minus the expenses of the operators.

Michael P. Gilvary recently completed his masters thesis in economics at the University of Illinois at Urbana-Champaign. Jane H. Leuthold is a professor of economics and Associate Dean for Academic Affairs in the College of Commerce and Business Administration at the University.

Illinois Business Indexes

The outlook for the Illinois economy in the coming months is ambiguous. The BEBR's three-month moving average Leading Economic Indicator Series remains below the six-month moving average for the fourth consecutive month (see Chart 1). Ordinarily, a series of three such months is considered a harbinger of recession. But there are reasons to doubt that such an outcome is likely.

Why did the leading indicator series fall so dramatically in July? The reason is that several major components of the series dropped, thereby exerting a strong negative influence on the overall series. Charts 2-6 also hint at stronger-than-average seasonal variation.

There was a sharper-than-usual decline in manufacturing employment earnings, both from the previous month and from a year earlier (Chart 2). Illinois residential housing permits have fallen 22.8 percent since May (Chart 3). July also saw a 15.1 percent increase in unemployment claims (Chart 4). Another drag on the leading indicator series was provided by the steady slide in retail sales through the first half of the summer (Chart 5). Finally, there was a $29 million decline in personal income tax revenue received by the state (Chart 6). Interpretation of the decline in tax revenues is difficult. The Illinois tax system was overhauled beginning with the new fiscal year. Thus, the drop may reflect factors other than generally lower earnings.

Is recession imminent? Most preliminary data for August show a rebound from their summer doldrums. Such an increase could represent a temporary upsurge, to be followed by a continuation of weakness. However, it is tempting to regard the most recent figures as evidence of renewed strength. We succumb to that temptation.

ILLINOIS BUSINESS INDEXES

	Percent Change July 1988–July 1989	July 1989	Jun. 1989	May 1989	Apr. 1989	July 1988	Jun. 1988
Leading Indicator (MA3)	−12.33[a]	2.94	7.19	9.97	12.50	15.27	14.06
Leading Indicator (MA6)	−6.02[a]	7.70	9.78	14.69	16.11	13.72	13.57
Employment-manufacturing (in thousands)[b]	3.31	978	987	981	980	947	950
Average weekly hours-manufacturing[b]	−1.92	41	42	42	42	42	42
Weekly earnings-manufacturing[b]	−0.95	$457.78	$470.25	$464.39	$465.50	$462.18	$464.67
Help wanted advertising-Chicago (1967 = 100)[c]	−11.76	105	104	105	112	119	117
Help wanted advertising-St. Louis (1967 = 100)[c]	−6.76	69	69	72	78	74	71
Retail sales (in millions)[d]	5.85	$6,413	$6,645	$6,697	$6,441	$6,059	$6,501
Petroleum products (in thousands of barrels)[b]	−16.25	1,675	1,780	1,850	1,820	2,000	1,990
Vendor performance[e]	−31.03	47%	48%	49%	53%	68%	70%
Building permits (in thousands)							
Residential housing units	−17.97	3.373	3.435	4.368	4.818	4.112	4.991
Value of residential housing	−11.92	$306,526	$329,703	$377,644	$380,748	$348,018	$419,199
Value of nonresidential construction							
Industrial buildings	36.74	$41,667	$50,955	$30,406	$20,483	$30,471	$32,728
Office, banks, and professional buildings	−22.64	$33,443	$154,428	$45,638	$93,349	$43,233	$52,488
Stores and other mercantile buildings	−15.01	$42,740	$59,292	$63,619	$39,739	$50,288	$59,009
Other	−29.43	$8,377	$5,280	$9,463	$7,221	$11,870	$6,211
Consumer price index (1982–84 = 100)							
North Central US	4.63	122.0	121.8	121.3	120.8	116.6	116.0
North Central/population more than 1,200,000	4.93	123.5	123.0	122.2	121.9	117.7	117.0
North Central/population 360,000 to 1,200,000	4.23	120.7	120.9	120.8	120.6	115.8	115.6
North Central/population 50,000 to 360,000	4.63	122.0	122.1	122.2	121.2	116.6	116.1
North Central/population less than 50,000	3.52	117.5	117.4	116.8	116.3	113.5	112.8
Chicago	5.51	126.4	125.7	123.9	124	119.8	118.9
St. Louis	6.12	123.1	—	121.5	—	116.0	—
		1988:IV	1988:III	1988:II	1988:I	1987:IV	1987:III
Personal income (in millions)[b,f,g]	1.70	$207,832	$204,345	$201,058	$199,986	$197,705	$190,015
Per capita personal income[b,f,g]	1.55	$17,846	$17,559	$17,289	$17,209	$17,025	$16,374

[a]Represents absolute change (percent change not relevant). [b]Recent month is preliminary figure. [c]The Conference Board, *Help Wanted Advertising*, November 1988. [d]Latest month projected by BEBR. [e]Percentage of companies receiving slower deliveries. [f]Seasonally adjusted at annual rates. [g]Percent change between 1987:IV and 1988:IV.

Chart 1. Composite Leading Indicators
(average percent change in base indexes)

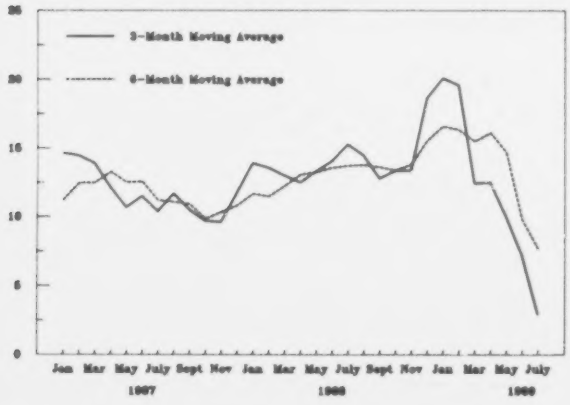


Chart 2. Average Weekly Manufacturing Earnings

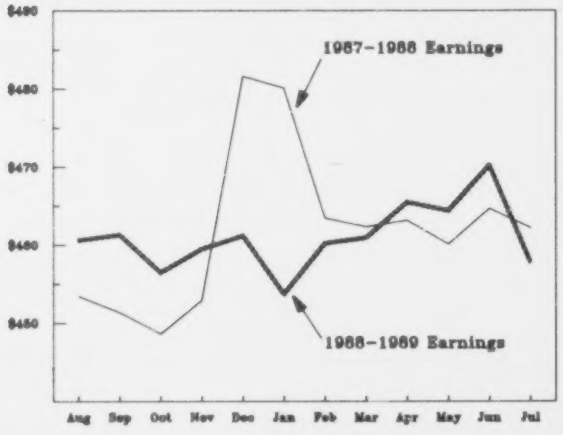


Chart 3. Illinois Residential Housing Permits

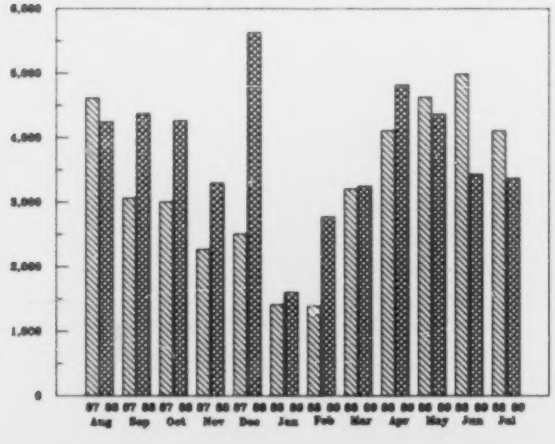


Chart 4. Illinois Initial Unemployment Claims

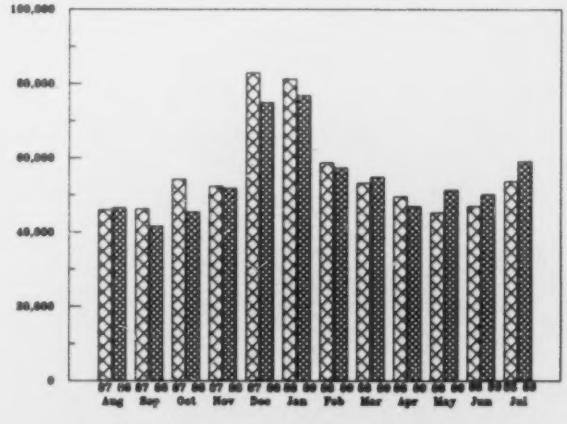


Chart 5. Retail Sales *(millions of dollars)*

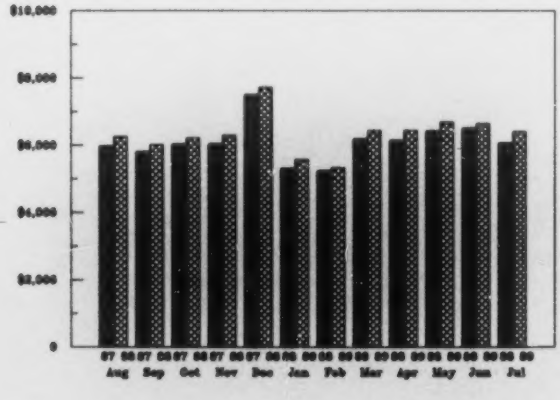
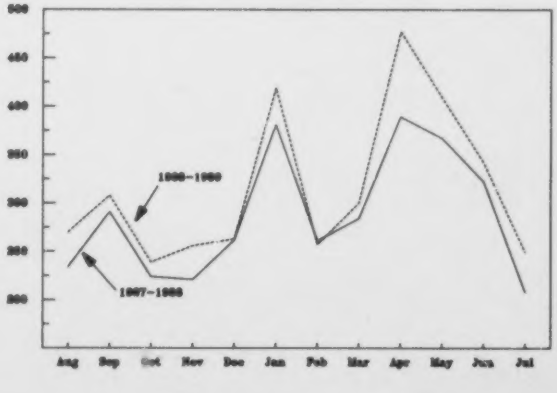


Chart 6. Illinois Personal Income Tax Receipts
(millions of dollars)



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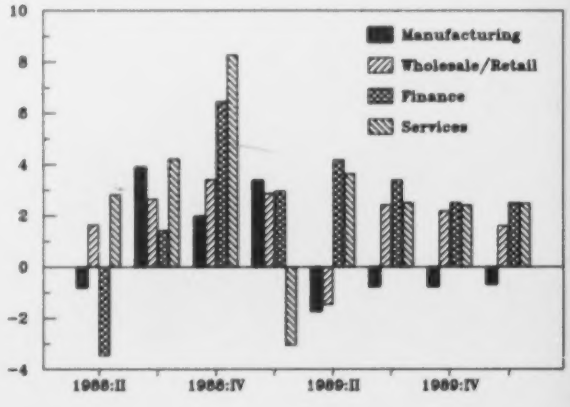
Illinois Economic Outlook

The latest forecast of the Illinois Econometric Model indicates that nominal personal income will grow 7 percent over the next 4 quarters. Rising from over $217 billion to more than $232 billion between the first quarter of 1989 and the first quarter of 1990, the growth in nominal income is due to large increases in income from services.

The chart shows quarterly changes in nominal income for each of the major sectors of the Illinois economy. The most noticeable feature is that increases in income from services, finance, and wholesale and retail trade are expected to offset the decline in manufacturing income. Given that national economic activity is important in determining the course of the state's economy, the forecast presented in the table assumes that the US economy will continue to grow about 1.2 percent each quarter. The degree of error in the Illinois forecast is, in large part,determined by the accuracy of the underlying national economic forecasts.

Personal Income *(percentage change from previous quarter)*



Illinois Seasonally Adjusted Personal Income *(nominal, at annual rates)*

	History				Forecast			
	1988:II	1988:III	1988:IV	1989:I	1989:II	1989:III	1989:IV	1990:I
Total private income (millions)	$200,668	$204,026	$210,569	$217,824	$221,438	$225,107	$228,832	$232,614
Total private nonagricultural income	127,419	131,313	137,492	139,480	140,640	143,163	145,330	147,313
Mining	975	1,023	899	899	957	1,048	1,072	1,079
Construction	9,059	8,970	9,636	10,322	10,281	10,606	10,772	10,835
Manufacturing	31,406	32,635	33,285	34,415	33,818	33,556	33,299	33,071
Durable manufacturing	19,238	19,957	20,736	21,342	20,869	20,450	20,083	19,758
Nondurable manufacturing	12,168	12,678	12,549	13,073	12,949	13,107	13,216	13,313
Transportation and public utilities	11,345	11,652	11,759	12,012	12,101	12,260	12,474	12,676
Wholesale trade	11,646	12,133	12,617	12,958	12,698	12,996	13,197	13,410
Retail trade	13,648	13,834	14,237	14,669	14,524	14,887	15,296	15,546
Finance, insurance, and real estate	12,763	12,945	13,781	14,190	14,784	15,286	15,671	16,064
Services	36,577	38,121	41,278	40,015	41,477	42,523	43,550	44,632

Bureau of Economic and Business Research